

# ANSWERS

0 <u>8</u> <u>8</u>	5 <u>8</u> <u>13</u>	9 <u>8</u> <u>17</u>	2 <u>8</u> <u>10</u>	6 <u>8</u> <u>14</u>	3 <u>8</u> <u>11</u>	7 <u>8</u> <u>15</u>	8 <u>8</u> <u>16</u>	4 <u>8</u> <u>12</u>
1 <u>7</u> <u>8</u>	4 <u>7</u> <u>11</u>	7 <u>7</u> <u>14</u>	0 <u>7</u> <u>7</u>	5 <u>7</u> <u>12</u>	8 <u>7</u> <u>15</u>	3 <u>7</u> <u>10</u>	6 <u>7</u> <u>13</u>	9 <u>7</u> <u>16</u>
1 <u>6</u> <u>7</u>	3 <u>6</u> <u>9</u>	2 <u>6</u> <u>8</u>	4 <u>6</u> <u>10</u>	5 <u>6</u> <u>11</u>	7 <u>6</u> <u>13</u>	6 <u>6</u> <u>12</u>	0 <u>6</u> <u>6</u>	9 <u>6</u> <u>15</u>
1 <u>5</u> <u>6</u>	3 <u>5</u> <u>8</u>	5 <u>5</u> <u>10</u>	7 <u>5</u> <u>12</u>	9 <u>5</u> <u>14</u>	0 <u>5</u> <u>5</u>	4 <u>5</u> <u>9</u>	6 <u>5</u> <u>11</u>	8 <u>5</u> <u>13</u>
9 <u>4</u> <u>13</u>	0 <u>4</u> <u>4</u>	5 <u>4</u> <u>9</u>	3 <u>4</u> <u>7</u>	1 <u>4</u> <u>5</u>	8 <u>4</u> <u>12</u>	6 <u>4</u> <u>10</u>	4 <u>4</u> <u>8</u>	2 <u>4</u> <u>6</u>
1 <u>3</u> <u>4</u>	3 <u>3</u> <u>6</u>	0 <u>3</u> <u>3</u>	7 <u>3</u> <u>10</u>	9 <u>3</u> <u>12</u>	2 <u>3</u> <u>5</u>	4 <u>3</u> <u>7</u>	6 <u>3</u> <u>9</u>	8 <u>3</u> <u>11</u>
4 <u>2</u> <u>6</u>	6 <u>2</u> <u>8</u>	0 <u>2</u> <u>2</u>	8 <u>2</u> <u>10</u>	7 <u>2</u> <u>9</u>	9 <u>2</u> <u>11</u>	2 <u>2</u> <u>4</u>	5 <u>2</u> <u>7</u>	1 <u>2</u> <u>3</u>
1 <u>1</u> <u>2</u>	2 <u>1</u> <u>3</u>	0 <u>1</u> <u>1</u>	4 <u>1</u> <u>5</u>	5 <u>1</u> <u>6</u>	6 <u>1</u> <u>7</u>	7 <u>1</u> <u>8</u>	8 <u>1</u> <u>9</u>	9 <u>1</u> <u>10</u>

This is a basic column addition of numbers. It is a continued basis from the previous page.  
Remember speed is important, but accuracy is best.

5 4 <u>3</u> <u>12</u>	4 4 <u>5</u> <u>13</u>	3 6 <u>2</u> <u>11</u>	7 2 <u>1</u> <u>10</u>	6 3 <u>6</u> <u>15</u>	4 5 <u>8</u> <u>17</u>	8 1 <u>3</u> <u>12</u>	2 7 <u>6</u> <u>15</u>	5 3 <u>8</u> <u>16</u>
4 9 <u>6</u> <u>19</u>	5 7 <u>3</u> <u>15</u>	8 1 <u>4</u> <u>13</u>	2 7 <u>5</u> <u>14</u>	1 4 <u>8</u> <u>13</u>	3 5 <u>7</u> <u>15</u>	4 3 <u>6</u> <u>13</u>	6 5 <u>8</u> <u>19</u>	7 5 <u>6</u> <u>18</u>
8 1 6 <u>7</u> <u>22</u>	1 9 8 <u>5</u> <u>23</u>	7 3 4 <u>6</u> <u>20</u>	9 2 5 <u>7</u> <u>23</u>	4 3 8 <u>5</u> <u>20</u>	2 7 3 <u>8</u> <u>20</u>	5 3 4 <u>7</u> <u>19</u>	3 4 6 <u>5</u> <u>18</u>	6 2 5 <u>7</u> <u>20</u>
7 4 3 <u>9</u> <u>23</u>	5 5 7 <u>4</u> <u>21</u>	8 3 5 <u>6</u> <u>22</u>	6 5 8 <u>4</u> <u>23</u>	4 3 6 <u>8</u> <u>21</u>	2 4 8 <u>5</u> <u>19</u>	3 5 6 <u>7</u> <u>21</u>	7 2 4 <u>9</u> <u>22</u>	1 4 9 <u>7</u> <u>21</u>
3 2 4 7 <u>8</u> <u>25</u>	1 6 5 3 <u>4</u> <u>19</u>	2 4 3 6 <u>5</u> <u>20</u>	5 3 1 4 <u>9</u> <u>22</u>	4 2 2 9 <u>5</u> <u>22</u>	5 5 2 5 <u>6</u> <u>23</u>	2 3 4 1 <u>7</u> <u>17</u>	1 6 2 5 <u>8</u> <u>22</u>	3 3 1 4 <u>9</u> <u>20</u>

Adding larger numbers. Start in the ones column, then move to the tens, hundreds, thousands, etc.

633 <u>264</u> 897	144 <u>650</u> 794	337 <u>242</u> 579	455 <u>324</u> 779	382 <u>17</u> 399	447 <u>32</u> 479	507 <u>421</u> 928
134 <u>55</u> 189	322 <u>475</u> 797	274 <u>725</u> 999	630 <u>307</u> 937	720 <u>250</u> 970	432 <u>345</u> 777	35 <u>64</u> 99
4536 <u>3343</u> 7879	3215 <u>3584</u> 6799	4167 <u>3522</u> 7689	3156 <u>5732</u> 8888	7135 <u>2564</u> 9699	1054 <u>6325</u> 7379	2535 <u>6442</u> 8977
3270 <u>4621</u> 7891	4224 <u>3615</u> 7839	6328 <u>1050</u> 7378	8341 <u>1628</u> 9969	7006 <u>2893</u> 9899	1681 <u>4218</u> 5899	3516 <u>4102</u> 7618
1275 <u>3521</u> 4796	2144 <u>7050</u> 9194	2369 <u>6530</u> 8899	4527 <u>4302</u> 8829	1733 <u>6254</u> 7987	4616 <u>3273</u> 7889	1783 <u>5214</u> 6997
2350 <u>7629</u> 9979	3244 <u>5531</u> 8775	2768 <u>6121</u> 8889	4582 <u>1413</u> 6995	4610 <u>3071</u> 7681	4507 <u>3421</u> 7928	6830 <u>1103</u> 7933

Renaming in addition. When the sum in a column is more than 9, you have to regroup to the next column.

$\begin{array}{r} 525 \\ \underline{356} \\ 881 \end{array}$	$\begin{array}{r} 338 \\ \underline{243} \\ 581 \end{array}$	$\begin{array}{r} 516 \\ \underline{247} \\ 763 \end{array}$	$\begin{array}{r} 429 \\ \underline{354} \\ 783 \end{array}$	$\begin{array}{r} 354 \\ \underline{237} \\ 591 \end{array}$	$\begin{array}{r} 536 \\ \underline{245} \\ 781 \end{array}$
$\begin{array}{r} 337 \\ \underline{427} \\ 764 \end{array}$	$\begin{array}{r} 212 \\ \underline{359} \\ 571 \end{array}$	$\begin{array}{r} 327 \\ \underline{555} \\ 882 \end{array}$	$\begin{array}{r} 235 \\ \underline{719} \\ 954 \end{array}$	$\begin{array}{r} 335 \\ \underline{528} \\ 863 \end{array}$	$\begin{array}{r} 438 \\ \underline{432} \\ 870 \end{array}$
$\begin{array}{r} 234 \\ \underline{439} \\ 673 \end{array}$	$\begin{array}{r} 234 \\ \underline{358} \\ 592 \end{array}$	$\begin{array}{r} 217 \\ \underline{374} \\ 591 \end{array}$	$\begin{array}{r} 249 \\ \underline{515} \\ 764 \end{array}$	$\begin{array}{r} 235 \\ \underline{518} \\ 753 \end{array}$	$\begin{array}{r} 225 \\ \underline{226} \\ 451 \end{array}$
$\begin{array}{r} 639 \\ \underline{241} \\ 880 \end{array}$	$\begin{array}{r} 223 \\ \underline{347} \\ 570 \end{array}$	$\begin{array}{r} 325 \\ \underline{455} \\ 780 \end{array}$	$\begin{array}{r} 518 \\ \underline{272} \\ 790 \end{array}$	$\begin{array}{r} 475 \\ \underline{315} \\ 790 \end{array}$	$\begin{array}{r} 516 \\ \underline{274} \\ 790 \end{array}$
$\begin{array}{r} 459 \\ \underline{321} \\ 780 \end{array}$	$\begin{array}{r} 353 \\ \underline{217} \\ 570 \end{array}$	$\begin{array}{r} 612 \\ \underline{178} \\ 790 \end{array}$	$\begin{array}{r} 328 \\ \underline{647} \\ 975 \end{array}$	$\begin{array}{r} 575 \\ \underline{315} \\ 890 \end{array}$	$\begin{array}{r} 356 \\ \underline{424} \\ 780 \end{array}$
$\begin{array}{r} 475 \\ \underline{336} \\ 811 \end{array}$	$\begin{array}{r} 347 \\ \underline{486} \\ 833 \end{array}$	$\begin{array}{r} 329 \\ \underline{584} \\ 913 \end{array}$	$\begin{array}{r} 735 \\ \underline{398} \\ 1133 \end{array}$	$\begin{array}{r} 616 \\ \underline{595} \\ 1211 \end{array}$	$\begin{array}{r} 534 \\ \underline{497} \\ 1031 \end{array}$

Reading and writing large numbers. The number 7,654,321 is read as : seven million, six hundred fifty-four thousand, three hundred twenty-one. You place commas after three numbers to help separate and read them better. Do not use the word “and”.

Write the following numbers in words:

1,957	One thousand, nine hundred fifty-seven
1,815	One thousand, eight hundred fifteen
10,980	Ten thousand, nine hundred eighty
25,987	Twenty-five thousand, nine hundred eighty-seven
123,456	One hundred twenty-three thousand, four hundred fifty-six
756,000	Seven hundred fifty-six thousand
84,002	Eighty-four thousand, two
1,658,002	On million, six hundred fifty-eight thousand, two

Write the following numbers in digits: two million, three hundred thirty-three thousand, four hundred fifteen. \_\_\_\_\_ 2,333,415

Subtraction is the opposite of addition. It means to take away. Start at the ones column and move left.

$\begin{array}{r} 7 \\ \underline{5} \\ 2 \end{array}$	$\begin{array}{r} 9 \\ \underline{2} \\ 7 \end{array}$	$\begin{array}{r} 6 \\ \underline{2} \\ 4 \end{array}$	$\begin{array}{r} 8 \\ \underline{3} \\ 5 \end{array}$	$\begin{array}{r} 7 \\ \underline{4} \\ 3 \end{array}$	$\begin{array}{r} 9 \\ \underline{5} \\ 4 \end{array}$	$\begin{array}{r} 8 \\ \underline{5} \\ 3 \end{array}$
$\begin{array}{r} 16 \\ \underline{9} \\ 7 \end{array}$	$\begin{array}{r} 17 \\ \underline{8} \\ 9 \end{array}$	$\begin{array}{r} 14 \\ \underline{9} \\ 5 \end{array}$	$\begin{array}{r} 15 \\ \underline{6} \\ 9 \end{array}$	$\begin{array}{r} 16 \\ \underline{7} \\ 9 \end{array}$	$\begin{array}{r} 13 \\ \underline{8} \\ 5 \end{array}$	$\begin{array}{r} 14 \\ \underline{5} \\ 9 \end{array}$
$\begin{array}{r} 58 \\ \underline{33} \\ 25 \end{array}$	$\begin{array}{r} 87 \\ \underline{53} \\ 34 \end{array}$	$\begin{array}{r} 79 \\ \underline{45} \\ 34 \end{array}$	$\begin{array}{r} 67 \\ \underline{43} \\ 24 \end{array}$	$\begin{array}{r} 98 \\ \underline{75} \\ 23 \end{array}$	$\begin{array}{r} 87 \\ \underline{34} \\ 53 \end{array}$	$\begin{array}{r} 45 \\ \underline{21} \\ 24 \end{array}$
$\begin{array}{r} \$6.96 \\ \underline{2.51} \\ 4.45 \end{array}$	$\begin{array}{r} \$9.95 \\ \underline{4.52} \\ 5.43 \end{array}$	$\begin{array}{r} \$8.77 \\ \underline{3.42} \\ 5.35 \end{array}$	$\begin{array}{r} \$7.88 \\ \underline{4.35} \\ 3.53 \end{array}$	$\begin{array}{r} \$9.87 \\ \underline{2.53} \\ 7.34 \end{array}$	$\begin{array}{r} \$5.79 \\ \underline{2.34} \\ 3.45 \end{array}$	$\begin{array}{r} \$4.48 \\ \underline{2.22} \\ 2.26 \end{array}$
$\begin{array}{r} 1576 \\ \underline{834} \\ 742 \end{array}$	$\begin{array}{r} 1497 \\ \underline{943} \\ 554 \end{array}$	$\begin{array}{r} 1769 \\ \underline{825} \\ 944 \end{array}$	$\begin{array}{r} 1398 \\ \underline{745} \\ 653 \end{array}$	$\begin{array}{r} 1398 \\ \underline{745} \\ 653 \end{array}$	$\begin{array}{r} 1687 \\ \underline{934} \\ 753 \end{array}$	$\begin{array}{r} 1275 \\ \underline{542} \\ 733 \end{array}$
$\begin{array}{r} 807 \\ \underline{304} \\ 503 \end{array}$	$\begin{array}{r} 1295 \\ \underline{801} \\ 494 \end{array}$	$\begin{array}{r} 1769 \\ \underline{804} \\ 965 \end{array}$	$\begin{array}{r} 958 \\ \underline{403} \\ 555 \end{array}$	$\begin{array}{r} 769 \\ \underline{405} \\ 364 \end{array}$	$\begin{array}{r} 896 \\ \underline{450} \\ 446 \end{array}$	$\begin{array}{r} 879 \\ \underline{223} \\ 656 \end{array}$

Renaming in subtraction. When your top number, the subtrahend, is larger than those in the bottom number, the minuend, it is necessary to rename the digit in the minuend before carrying out the subtraction. You need to “borrow” from the neighbor.

$\begin{array}{r} 74 \\ \underline{25} \\ 49 \end{array}$	$\begin{array}{r} 85 \\ \underline{36} \\ 49 \end{array}$	$\begin{array}{r} 75 \\ \underline{49} \\ 26 \end{array}$	$\begin{array}{r} 73 \\ \underline{34} \\ 39 \end{array}$	$\begin{array}{r} 53 \\ \underline{29} \\ 24 \end{array}$	$\begin{array}{r} 57 \\ \underline{38} \\ 19 \end{array}$	$\begin{array}{r} 86 \\ \underline{39} \\ 47 \end{array}$
$\begin{array}{r} 894 \\ \underline{686} \\ 208 \end{array}$	$\begin{array}{r} 516 \\ \underline{487} \\ 29 \end{array}$	$\begin{array}{r} 927 \\ \underline{198} \\ 729 \end{array}$	$\begin{array}{r} 463 \\ \underline{226} \\ 237 \end{array}$	$\begin{array}{r} 547 \\ \underline{368} \\ 179 \end{array}$	$\begin{array}{r} 263 \\ \underline{148} \\ 115 \end{array}$	$\begin{array}{r} 861 \\ \underline{502} \\ 359 \end{array}$
$\begin{array}{r} 754 \\ \underline{275} \\ 479 \end{array}$	$\begin{array}{r} 635 \\ \underline{247} \\ 388 \end{array}$	$\begin{array}{r} 625 \\ \underline{247} \\ 378 \end{array}$	$\begin{array}{r} 513 \\ \underline{234} \\ 279 \end{array}$	$\begin{array}{r} 843 \\ \underline{544} \\ 299 \end{array}$	$\begin{array}{r} 752 \\ \underline{269} \\ 483 \end{array}$	$\begin{array}{r} 647 \\ \underline{258} \\ 389 \end{array}$
$\begin{array}{r} 1776 \\ \underline{798} \\ 978 \end{array}$	$\begin{array}{r} 1396 \\ \underline{479} \\ 917 \end{array}$	$\begin{array}{r} 1655 \\ \underline{727} \\ 928 \end{array}$	$\begin{array}{r} 1564 \\ \underline{849} \\ 715 \end{array}$	$\begin{array}{r} 1293 \\ \underline{454} \\ 839 \end{array}$	$\begin{array}{r} 1863 \\ \underline{945} \\ 918 \end{array}$	$\begin{array}{r} 1472 \\ \underline{958} \\ 514 \end{array}$
$\begin{array}{r} \$12.65 \\ \underline{4.52} \\ 8.13 \end{array}$	$\begin{array}{r} \$17.76 \\ \underline{9.42} \\ 8.34 \end{array}$	$\begin{array}{r} 16.77 \\ \underline{7.38} \\ 9.39 \end{array}$	$\begin{array}{r} 15.89 \\ \underline{8.55} \\ 7.34 \end{array}$	$\begin{array}{r} 14.95 \\ \underline{9.59} \\ 5.36 \end{array}$	$\begin{array}{r} 16.78 \\ \underline{9.45} \\ 7.33 \end{array}$	$\begin{array}{r} 12.32 \\ \underline{5.84} \\ 6.48 \end{array}$

Add the following numbers.

776 667 439 <u>254</u> <u>2136</u>	1923 2749 1637 <u>2254</u> <u>8563</u>	2059 3204 1080 <u>2207</u> <u>8550</u>	9 54 978 <u>1999</u> <u>3040</u>	18 209 4006 <u>159</u> <u>4392</u>	634 19 2067 <u>423</u> <u>3143</u>
\$18.30 79.06 60.45 <u>70.03</u> <u>227.84</u>	\$316.84 954.39 817.67 <u>323.54</u> <u>.2412.44</u>	20.02 14.39 7.06 <u>41.91</u> <u>83.38</u>	12.49 6.34 29.17 <u>62.35</u> <u>110.35</u>	241.02 19.08 14.39 <u>6.42</u> <u>280.91</u>	1264.48 395.55 18.01 <u>1223.49</u> <u>2901.53</u>

Subtract the following numbers.

794 <u>456</u> <u>338</u>	870 <u>374</u> <u>496</u>	5060 <u>1892</u> <u>3168</u>	30105 <u>19648</u> <u>10457</u>	\$620.11 <u>148.28</u> <u>471.83</u>	1000.44 <u>909.75</u> <u>90.69</u>
74785 <u>64879</u> <u>9906</u>	30689 <u>4645</u> <u>26044</u>	87000 <u>67099</u> <u>19901</u>	59764 <u>25000</u> <u>34764</u>	540000 <u>236909</u> <u>303091</u>	306050 <u>145059</u> <u>160991</u>



Multiplication facts. Remember speed is important, but accuracy is more important and must come first.

$\begin{array}{r} 5 \\ \underline{2} \\ 10 \end{array}$	$\begin{array}{r} 7 \\ \underline{2} \\ 14 \end{array}$	$\begin{array}{r} 9 \\ \underline{2} \\ 18 \end{array}$	$\begin{array}{r} 5 \\ \underline{3} \\ 15 \end{array}$	$\begin{array}{r} 5 \\ \underline{4} \\ 20 \end{array}$	$\begin{array}{r} 6 \\ \underline{3} \\ 18 \end{array}$	$\begin{array}{r} 6 \\ \underline{4} \\ 24 \end{array}$	$\begin{array}{r} 9 \\ \underline{4} \\ 36 \end{array}$
$\begin{array}{r} 7 \\ \underline{2} \\ 14 \end{array}$	$\begin{array}{r} 3 \\ \underline{5} \\ 15 \end{array}$	$\begin{array}{r} 7 \\ \underline{3} \\ 21 \end{array}$	$\begin{array}{r} 6 \\ \underline{4} \\ 24 \end{array}$	$\begin{array}{r} 4 \\ \underline{8} \\ 32 \end{array}$	$\begin{array}{r} 5 \\ \underline{9} \\ 45 \end{array}$	$\begin{array}{r} 5 \\ \underline{8} \\ 40 \end{array}$	$\begin{array}{r} 9 \\ \underline{5} \\ 45 \end{array}$
$\begin{array}{r} 7 \\ \underline{5} \\ 35 \end{array}$	$\begin{array}{r} 5 \\ \underline{4} \\ 20 \end{array}$	$\begin{array}{r} 5 \\ \underline{6} \\ 30 \end{array}$	$\begin{array}{r} 9 \\ \underline{2} \\ 18 \end{array}$	$\begin{array}{r} 9 \\ \underline{4} \\ 36 \end{array}$	$\begin{array}{r} 6 \\ \underline{3} \\ 18 \end{array}$	$\begin{array}{r} 2 \\ \underline{8} \\ 16 \end{array}$	$\begin{array}{r} 3 \\ \underline{4} \\ 12 \end{array}$
$\begin{array}{r} 3 \\ \underline{7} \\ 21 \end{array}$	$\begin{array}{r} 4 \\ \underline{6} \\ 24 \end{array}$	$\begin{array}{r} 9 \\ \underline{5} \\ 45 \end{array}$	$\begin{array}{r} 3 \\ \underline{5} \\ 15 \end{array}$	$\begin{array}{r} 5 \\ \underline{8} \\ 40 \end{array}$	$\begin{array}{r} 7 \\ \underline{3} \\ 21 \end{array}$	$\begin{array}{r} 7 \\ \underline{2} \\ 14 \end{array}$	$\begin{array}{r} 4 \\ \underline{8} \\ 32 \end{array}$
$\begin{array}{r} 5 \\ \underline{6} \\ 30 \end{array}$	$\begin{array}{r} 6 \\ \underline{6} \\ 36 \end{array}$	$\begin{array}{r} 7 \\ \underline{7} \\ 49 \end{array}$	$\begin{array}{r} 8 \\ \underline{8} \\ 64 \end{array}$	$\begin{array}{r} 3 \\ \underline{9} \\ 27 \end{array}$	$\begin{array}{r} 4 \\ \underline{7} \\ 28 \end{array}$	$\begin{array}{r} 9 \\ \underline{5} \\ 45 \end{array}$	$\begin{array}{r} 6 \\ \underline{7} \\ 42 \end{array}$
$\begin{array}{r} 9 \\ \underline{9} \\ 81 \end{array}$	$\begin{array}{r} 9 \\ \underline{7} \\ 63 \end{array}$	$\begin{array}{r} 9 \\ \underline{5} \\ 45 \end{array}$	$\begin{array}{r} 9 \\ \underline{3} \\ 27 \end{array}$	$\begin{array}{r} 8 \\ \underline{2} \\ 16 \end{array}$	$\begin{array}{r} 8 \\ \underline{4} \\ 32 \end{array}$	$\begin{array}{r} 8 \\ \underline{6} \\ 48 \end{array}$	$\begin{array}{r} 8 \\ \underline{8} \\ 64 \end{array}$
$\begin{array}{r} 9 \\ \underline{6} \\ 54 \end{array}$	$\begin{array}{r} 8 \\ \underline{9} \\ 72 \end{array}$	$\begin{array}{r} 6 \\ \underline{5} \\ 30 \end{array}$	$\begin{array}{r} 6 \\ \underline{7} \\ 42 \end{array}$	$\begin{array}{r} 7 \\ \underline{8} \\ 56 \end{array}$	$\begin{array}{r} 4 \\ \underline{9} \\ 36 \end{array}$	$\begin{array}{r} 7 \\ \underline{5} \\ 35 \end{array}$	$\begin{array}{r} 6 \\ \underline{9} \\ 54 \end{array}$

Multiplying larger numbers.

$\begin{array}{r} 12 \\ \underline{4} \\ 48 \end{array}$	$\begin{array}{r} 22 \\ \underline{3} \\ 66 \end{array}$	$\begin{array}{r} 34 \\ \underline{2} \\ 68 \end{array}$	$\begin{array}{r} 23 \\ \underline{3} \\ 69 \end{array}$	$\begin{array}{r} 11 \\ \underline{7} \\ 77 \end{array}$	$\begin{array}{r} 23 \\ \underline{2} \\ 46 \end{array}$	$\begin{array}{r} 21 \\ \underline{3} \\ 63 \end{array}$
$\begin{array}{r} 21 \\ \underline{7} \\ 147 \end{array}$	$\begin{array}{r} 31 \\ \underline{6} \\ 186 \end{array}$	$\begin{array}{r} 41 \\ \underline{8} \\ 328 \end{array}$	$\begin{array}{r} 54 \\ \underline{3} \\ 162 \end{array}$	$\begin{array}{r} 64 \\ \underline{2} \\ 128 \end{array}$	$\begin{array}{r} 83 \\ \underline{3} \\ 249 \end{array}$	$\begin{array}{r} 92 \\ \underline{4} \\ 368 \end{array}$
$\begin{array}{r} 12 \\ \underline{12} \\ 144 \end{array}$	$\begin{array}{r} 12 \\ \underline{13} \\ 156 \end{array}$	$\begin{array}{r} 23 \\ \underline{23} \\ 529 \end{array}$	$\begin{array}{r} 33 \\ \underline{33} \\ 1089 \end{array}$	$\begin{array}{r} 42 \\ \underline{21} \\ 882 \end{array}$	$\begin{array}{r} 24 \\ \underline{22} \\ 528 \end{array}$	$\begin{array}{r} 44 \\ \underline{22} \\ 968 \end{array}$
$\begin{array}{r} 234 \\ \underline{12} \\ 2808 \end{array}$	$\begin{array}{r} 123 \\ \underline{32} \\ 3936 \end{array}$	$\begin{array}{r} 233 \\ \underline{25} \\ 5825 \end{array}$	$\begin{array}{r} 3222 \\ \underline{123} \\ 396306 \end{array}$	$\begin{array}{r} 1232 \\ \underline{321} \\ 395472 \end{array}$	$\begin{array}{r} 3113 \\ \underline{232} \\ 722216 \end{array}$	$\begin{array}{r} 2401 \\ \underline{21} \\ 50421 \end{array}$

# Renaming in multiplication

$\begin{array}{r} 43 \\ \underline{9} \\ 387 \end{array}$	$\begin{array}{r} 56 \\ \underline{7} \\ 392 \end{array}$	$\begin{array}{r} 65 \\ \underline{5} \\ 325 \end{array}$	$\begin{array}{r} 59 \\ \underline{4} \\ 236 \end{array}$	$\begin{array}{r} 87 \\ \underline{3} \\ 261 \end{array}$	$\begin{array}{r} 36 \\ \underline{3} \\ 108 \end{array}$
$\begin{array}{r} \$ .79 \\ \underline{5} \\ 3.95 \end{array}$	$\begin{array}{r} \$ .82 \\ \underline{6} \\ 4.92 \end{array}$	$\begin{array}{r} \$ .77 \\ \underline{5} \\ 3.85 \end{array}$	$\begin{array}{r} \$ .62 \\ \underline{8} \\ 4.96 \end{array}$	$\begin{array}{r} \$36 \\ \underline{8} \\ 288.00 \end{array}$	$\begin{array}{r} \$ .29 \\ \underline{6} \\ 1.74 \end{array}$
$\begin{array}{r} 55 \\ \underline{37} \\ 2035 \end{array}$	$\begin{array}{r} 68 \\ \underline{25} \\ 1700 \end{array}$	$\begin{array}{r} 77 \\ \underline{43} \\ 3311 \end{array}$	$\begin{array}{r} 59 \\ \underline{22} \\ 1298 \end{array}$	$\begin{array}{r} 88 \\ \underline{23} \\ 2024 \end{array}$	$\begin{array}{r} 74 \\ \underline{34} \\ 2516 \end{array}$
$\begin{array}{r} 618 \\ \underline{34} \\ 21012 \end{array}$	$\begin{array}{r} 743 \\ \underline{25} \\ 18575 \end{array}$	$\begin{array}{r} 912 \\ \underline{18} \\ 16416 \end{array}$	$\begin{array}{r} 527 \\ \underline{24} \\ 12648 \end{array}$	$\begin{array}{r} 452 \\ \underline{16} \\ 7232 \end{array}$	$\begin{array}{r} 345 \\ \underline{32} \\ 11040 \end{array}$

# Multiplication review

$\begin{array}{r} 649 \\ \underline{9} \\ 5841 \end{array}$	$\begin{array}{r} 769 \\ \underline{8} \\ 6152 \end{array}$	$\begin{array}{r} 825 \\ \underline{6} \\ 4950 \end{array}$	$\begin{array}{r} 892 \\ \underline{8} \\ 7136 \end{array}$	$\begin{array}{r} 483 \\ \underline{9} \\ 4347 \end{array}$	$\begin{array}{r} 536 \\ \underline{7} \\ 3752 \end{array}$
$\begin{array}{r} 785 \\ \underline{7} \\ 5495 \end{array}$	$\begin{array}{r} 849 \\ \underline{8} \\ 6792 \end{array}$	$\begin{array}{r} 675 \\ \underline{9} \\ 6075 \end{array}$	$\begin{array}{r} 935 \\ \underline{5} \\ 4675 \end{array}$	$\begin{array}{r} 684 \\ \underline{7} \\ 4788 \end{array}$	$\begin{array}{r} 324 \\ \underline{8} \\ 2592 \end{array}$
$\begin{array}{r} 53 \\ 25 \\ \underline{1325} \end{array}$	$\begin{array}{r} 46 \\ 47 \\ \underline{2162} \end{array}$	$\begin{array}{r} 90 \\ 58 \\ \underline{5220} \end{array}$	$\begin{array}{r} 19 \\ 36 \\ \underline{684} \end{array}$	$\begin{array}{r} 38 \\ 28 \\ \underline{1064} \end{array}$	$\begin{array}{r} 37 \\ 57 \\ \underline{2109} \end{array}$
$\begin{array}{r} 35 \\ 60 \\ \underline{2100} \end{array}$	$\begin{array}{r} 18 \\ 70 \\ \underline{1260} \end{array}$	$\begin{array}{r} 56 \\ 20 \\ \underline{1120} \end{array}$	$\begin{array}{r} 49 \\ 30 \\ \underline{1470} \end{array}$	$\begin{array}{r} 28 \\ 40 \\ \underline{1120} \end{array}$	$\begin{array}{r} 37 \\ 50 \\ \underline{1850} \end{array}$
$\begin{array}{r} 584 \\ 69 \\ \underline{40296} \end{array}$	$\begin{array}{r} 497 \\ 18 \\ \underline{8946} \end{array}$	$\begin{array}{r} 936 \\ 37 \\ \underline{34632} \end{array}$	$\begin{array}{r} 764 \\ 46 \\ \underline{35144} \end{array}$	$\begin{array}{r} 654 \\ 35 \\ \underline{22890} \end{array}$	$\begin{array}{r} 318 \\ 23 \\ \underline{7314} \end{array}$
$\begin{array}{r} 2675 \\ 128 \\ 342400 \end{array}$	$\begin{array}{r} 9735 \\ 849 \\ 8265015 \end{array}$	$\begin{array}{r} 3629 \\ 436 \\ 1582244 \end{array}$	$\begin{array}{r} 5474 \\ 328 \\ 1795472 \end{array}$	$\begin{array}{r} 1578 \\ 912 \\ 1439136 \end{array}$	$\begin{array}{r} 2815 \\ 715 \\ 2012725 \end{array}$

Simple division. \*\*In my wordpad, I am unable to make a correct division symbol like this



Instead I will be inserting this symbol  $\sqrt{\phantom{x}}$

$2 \times 8 = 16$	$16 \div 8 = 2$	$16 \div 2 = 8$
$4 \times 8 = 32$	$32 \div 8 = 4$	$32 \div 4 = 8$
$5 \times 7 = 35$	$35 \div 7 = 5$	$35 \div 5 = 7$
$3 \times 9 = 27$	$27 \div 9 = 3$	$27 \div 3 = 9$
$5 \times 8 = 40$	$40 \div 8 = 5$	$40 \div 5 = 8$
$3 \times 6 = 18$	$18 \div 3 = 6$	$18 \div 6 = 3$
$4 \times 9 = 36$	$36 \div 9 = 4$	$36 \div 4 = 9$
$5 \times 9 = 45$	$45 \div 9 = 5$	$45 \div 5 = 9$
$4 \times 7 = 28$	$28 \div 4 = 7$	$28 \div 7 = 4$
$5 \times 4 = 20$	$20 \div 4 = 5$	$20 \div 5 = 4$
$5 \times 0 = 0$	$4 \times 0 = 0$	$2 \div 2 = 1$
$5 \div 5 = 1$	$12 \div 3 = 4$	$3 \div 3 = 1$
$4 \div 2 = 2$	$0 \div 6 = 0$	$0 \div 8 = 0$
$16 \div 2 = 8$	$12 \div 4 = 3$	$25 \div 5 = 5$
$5$ $6\sqrt{30}$	$8$ $3\sqrt{24}$	$5$ $4\sqrt{20}$
$5$ $5\sqrt{25}$	$3$ $5\sqrt{15}$	$8$ $2\sqrt{16}$
$8$ $5\sqrt{40}$	$5$ $8\sqrt{40}$	$7$ $3\sqrt{21}$

Long division

58

64

43

$$6\sqrt{348}$$

$$3\sqrt{192}$$

$$4\sqrt{172}$$

32

121

121

$$7\sqrt{224}$$

$$8\sqrt{968}$$

$$7\sqrt{847}$$

65

61

33

$$3\sqrt{195}$$

$$6\sqrt{366}$$

$$5\sqrt{165}$$

39

53

17

$$5\sqrt{195}$$

$$4\sqrt{212}$$

$$5\sqrt{85}$$

Dividing by two place numbers.

$$13\sqrt{91}$$

7

$$16\sqrt{96}$$

6

$$14\sqrt{70}$$

5

$$25\sqrt{125}$$

5

$$33\sqrt{165}$$

5

$$43\sqrt{172}$$

4

$$15\sqrt{75}$$

5

$$14\sqrt{84}$$

6

$$13\sqrt{91}$$

7

$$17\sqrt{85}$$

5

$$25\sqrt{150}$$

6

$$42\sqrt{126}$$

3

Dividing by 2 and 3 place numbers

$$24\sqrt{5112}$$

$$26\sqrt{5512}$$

$$17\sqrt{3757}$$

$$213$$

$$212$$

$$221$$

$$172\sqrt{4128}$$

$$214\sqrt{7490}$$

$$312\sqrt{9984}$$

$$24$$

$$35$$

$$32$$

$$412\sqrt{51088}$$

$$275\sqrt{61600}$$

$$334\sqrt{41082}$$

$$124$$

$$224$$

$$123$$



Division with remainders

$$216 \overline{)48389}$$

$$412 \overline{)51089}$$

$$224 \text{ r}5$$

$$124 \text{ r}1$$

$$334 \overline{)40193}$$

$$161 \overline{)484499}$$

$$120 \text{ r}113$$

$$3009 \text{ r}50$$

$$418 \overline{)2102615}$$

$$275 \overline{)556619}$$

$$5030 \text{ r}75$$

$$2024 \text{ r}19$$

Review of all basic facts

<b>Add</b>	$\begin{array}{r} 2569 \\ 8754 \\ \hline 11323 \end{array}$	$\begin{array}{r} 1007 \\ 1640 \\ 2054 \\ \hline 3506 \\ 8207 \end{array}$	$\begin{array}{r} 3090 \\ 2300 \\ \hline 5390 \end{array}$	$\begin{array}{r} 2053 \\ 176 \\ 34 \\ \hline 2943 \\ 5206 \end{array}$
<b>Subtract</b>	$\begin{array}{r} 3764 \\ 2859 \\ \hline 905 \end{array}$	$\begin{array}{r} 1943 \\ 849 \\ \hline 1094 \end{array}$	$\begin{array}{r} 734 \\ 275 \\ \hline 459 \end{array}$	$\begin{array}{r} 3007 \\ 1908 \\ \hline 1099 \end{array}$
<b>Multiply</b>	$\begin{array}{r} 509 \\ 34 \\ \hline 17306 \end{array}$	$\begin{array}{r} 2516 \\ 123 \\ \hline 309468 \end{array}$	$\begin{array}{r} 305 \\ 250 \\ \hline 76250 \end{array}$	$\begin{array}{r} 4009 \\ 26 \\ \hline 104234 \end{array}$
<b>Divide</b>	$\begin{array}{l} 15\sqrt{225} \\ 15 \end{array}$	$\begin{array}{l} 18\sqrt{3600} \\ 200 \end{array}$	$\begin{array}{l} 32\sqrt{19616} \\ 613 \end{array}$	$\begin{array}{l} 82\sqrt{11726} \\ 143 \end{array}$

## Fractions

Greg and Amy bought a pizza. They agreed they would each get the same share. How much did each get? \_\_\_\_\_  $\frac{1}{2}$

How many halves make the whole, or 1?  $\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$

There are four friends in Brooklyn's class. What part of the whole pizza did each of them get if each one got an equal part? \_\_\_\_\_  $\frac{1}{4}$

1 pizza divided into 4 equal parts is divided into fourths  $\frac{1}{4}$ .

$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1$$

In the fraction  $\frac{1}{4}$ , 4 indicates the number of parts into which the pizza has been divided. It is called the denominator. The numerator tells how many parts are used. In the fraction  $\frac{1}{4}$ , the numerator is the number 1 above the line. It indicates 1 of the 4 parts.

Write the fraction three-fourths \_\_\_\_\_  $\frac{3}{4}$

Write two-fourths \_\_\_\_\_  $\frac{2}{4}$

Write as a fraction five-sixths \_\_\_\_\_  $\frac{5}{6}$

Which number is the denominator \_\_\_\_\_ bottom

There are 16 ounces in a pound. Express each of the following as a fraction of a pound:

2 oz \_\_\_\_\_ 4 oz \_\_\_\_\_ 7oz \_\_\_\_\_ 15oz \_\_\_\_\_ 9oz \_\_\_\_\_  $\frac{2}{16}, \frac{7}{16}, \frac{15}{16}, \frac{9}{16}$

There are 12 inches in a foot. Express each of the following as a fraction of a foot:

1 in \_\_\_\_\_ 5 in \_\_\_\_\_ 9in \_\_\_\_\_ 13in \_\_\_\_\_ 7i \_\_\_\_\_ 31in \_\_\_\_\_  $\frac{1}{12}, \frac{5}{12}, \frac{9}{12}, \frac{13}{16}, \frac{7}{12}, \frac{31}{12}$

There are 60 minutes in an hour. Express these as fractions of an hour:

1 min \_\_\_\_\_ 7min \_\_\_\_\_ 13min \_\_\_\_\_ 30min \_\_\_\_\_ 15min \_\_\_\_\_ 29min \_\_\_\_\_  $\frac{1}{60}, \frac{7}{60}, \frac{13}{60}, \frac{30}{60}, \frac{15}{60}, \frac{29}{60}$ .

## Adding fractions

To add fractions with like denominators, add the numerators and place the sum over the common denominator.

$\frac{4}{8}$	$\frac{1}{5}$	$\frac{3}{9}$	$\frac{2}{4}$	$\frac{6}{10}$	$\frac{3}{6}$
$\frac{1}{+8}$	$\frac{2}{+5}$	$\frac{1}{+9}$	$\frac{1}{+4}$	$\frac{1}{+10}$	$\frac{2}{+6}$
$\frac{5}{8}$	$\frac{3}{5}$	$\frac{4}{9}$	$\frac{3}{4}$	$\frac{7}{10}$	$\frac{5}{6}$

$\frac{1}{12}$	$\frac{4}{20}$	$\frac{1}{9}$	$\frac{7}{16}$	$\frac{2}{8}$
$\frac{5}{12}$	$\frac{3}{20}$	$\frac{3}{9}$	$\frac{3}{16}$	$\frac{3}{8}$
$\frac{3}{+12}$	$\frac{6}{+20}$	$\frac{2}{+9}$	$\frac{5}{+16}$	$\frac{1}{+8}$
$\frac{9}{12}$	$\frac{10}{20}$	$\frac{6}{9}$	$\frac{15}{16}$	$\frac{6}{8}$

$$\frac{1}{3} + \frac{5}{3} + \frac{2}{3} =$$

$$\frac{7}{5} + \frac{2}{5} + \frac{1}{5} =$$

$$\frac{3}{7} + \frac{1}{7} + \frac{5}{7} =$$

$$\frac{8}{3}$$

$$\frac{10}{5}$$

$$\frac{9}{7}$$

$$\frac{7}{5} + \frac{2}{5} + \frac{1}{5} =$$

$$\frac{1}{2} + \frac{1}{2} + \frac{3}{2} =$$

$$\frac{10}{5}$$

$$\frac{5}{2}$$

### Simplifying improper fraction

In the previous exercise we saw several fractions in which the numerator was larger than the denominator. Fractions should never be left like that. We will now learn how to reduce fractions to their simplest form.

A fraction that has a numerator larger than the denominator is called an improper fraction. Improper fractions should be changed to either whole numbers or mixed numbers. A mixed number contains a whole number and a fraction.  $4\frac{1}{4}$ .

To change an improper fraction to simplest form, divided the denominator into the numerator for a whole-number quotient. The remainder after dividing becomes the numerator of the fraction. To simplify  $\frac{5}{2}$ , divide 2 into 5 = 2 with a remainder of 1. Answer is  $2\frac{1}{2}$

Simplify the following improper fractions:

$$\frac{9}{8} = \frac{\quad}{\quad}$$

$1\frac{1}{2}$

$$\frac{13}{12} = \frac{\quad}{\quad}$$

$1\frac{1}{12}$

$$\frac{3}{2} = \frac{\quad}{\quad}$$

$1\frac{1}{2}$

$$\frac{21}{16} = \frac{\quad}{\quad}$$

$1\frac{5}{16}$

$$\frac{4}{3} = \frac{\quad}{\quad}$$

$1\frac{1}{3}$

$$\frac{6}{5} = \frac{\quad}{\quad}$$

$1\frac{1}{5}$

$$\frac{25}{5} = \frac{\quad}{\quad}$$

5

$$\frac{36}{6} = \frac{\quad}{\quad}$$

6

$$\frac{64}{4} = \frac{\quad}{\quad}$$

16

Add the following and simplify:

$$\frac{3}{10} + \frac{5}{10} + \frac{9}{10} =$$

$$\frac{1}{6} + \frac{5}{6} + \frac{7}{6} =$$

$$1\frac{7}{10}$$

$$2\frac{1}{6}$$

$$\frac{5}{8} + \frac{7}{8} + \frac{5}{8} =$$

$$\frac{7}{2} + \frac{9}{2} + \frac{4}{2} =$$

$$2\frac{1}{8}$$

$$10$$

## Reducing fractions

We learned how to reduce improper fractions, where the numerator is bigger than the denominator, now we will learn how to reduce proper fractions. A proper fraction is one with the numerator smaller than the denominator. All fractions should be reduced to their simplest form.

Let's take for example a pie cut into 8 slices. Let's say you have four of the slices. You would then have  $\frac{4}{8}$ . You wouldn't say, "I have  $\frac{4}{8}$  of the pie." The correct term would be, "I have  $\frac{1}{2}$  of the pie."

$$\frac{4}{8} = \frac{1}{2}$$

To get this answer, you take the highest common multiple that goes into both the numerator and denominator.

If you had  $\frac{3}{9}$ , you would decide which is the highest multiple that could go into both the 3 and the 9. Your answer is 3. Your final answer would be  $\frac{1}{3}$ .

Reduce the following fractions down:

$$\frac{10}{15} = \underline{\hspace{2cm}}$$

$$\frac{9}{12} = \underline{\hspace{2cm}}$$

$$\frac{6}{18} = \underline{\hspace{2cm}}$$

$$\frac{2}{3} = \frac{12}{32} = \underline{\hspace{2cm}}$$

$$\frac{3}{4} = \frac{12}{30} = \underline{\hspace{2cm}}$$

$$\frac{1}{3} = \frac{15}{30} = \underline{\hspace{2cm}}$$

$$\frac{3}{8}$$

$$\frac{2}{5}$$

$$\frac{1}{2}$$

Just as you can divide by the highest common multiple, you can also multiply both numbers to get equivalent fractions.

$\frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \frac{8}{16}$  to get to each fraction, we take and multiply both the numerator and denominator by 2.

$$\frac{1}{2} = \frac{\hspace{1cm}}{32}$$

$$\frac{5}{8} = \frac{\hspace{1cm}}{32}$$

$$16$$

$$20$$

$$\frac{3}{4} = \frac{\hspace{1cm}}{16} \quad 12$$

$$\frac{3}{4} = \frac{\hspace{1cm}}{12} \quad 9$$

Rewrite the following problems vertical to make them easier to work with.

$$\frac{1}{4} + 1\frac{1}{4} + 3\frac{3}{4} =$$

$$1\frac{1}{4}$$

$$\frac{3}{10} + \frac{8}{10} + \frac{7}{10} =$$

$$1\frac{4}{5}$$

$$\frac{6}{4} + \frac{7}{4} + 3\frac{3}{4} =$$

$$4$$

$$\frac{4}{6} + \frac{9}{6} + \frac{5}{6} =$$

$$3$$

$$\frac{10}{8} + \frac{3}{8} + \frac{5}{8} + \frac{7}{8} =$$

$$3\frac{1}{8}$$

$$\frac{4}{5} + \frac{9}{5} + \frac{7}{5} = 4$$

### Adding with unlike denominators

When adding fractions all denominators must be the same. If they are not you will have to make them all have common denominators. If you were adding  $\frac{1}{3}$  and  $\frac{1}{4}$ , you would have to look at both denominators and see what is the lowest number that both 3 and 4 will go into....the answer is 12. Then you make equivalent fractions like you did in the previous pages and then proceed to add. This is an old school way, in our 7<sup>th</sup> grade math, we learned how to do a newer way to add fractions. You can do either method.

Rewrite the following problems vertically and then solve.

$$\frac{1}{12} + \frac{1}{4} =$$

$$\frac{1}{3}$$

$$\frac{4}{8} + \frac{1}{4} =$$

$$\frac{3}{4}$$

$$\frac{1}{6} + \frac{1}{3} =$$

$$\frac{1}{2}$$

$$\frac{3}{4} + \frac{1}{3} =$$

$$1 \frac{1}{12}$$

$$\frac{3}{4} + \frac{13}{16} =$$

$$1 \frac{9}{16}$$

$$\frac{1}{3} + \frac{15}{16} =$$

$$1 \frac{13}{48}$$

$$\frac{9}{16} + \frac{7}{8} =$$

$$1 \frac{7}{16}$$

$$\frac{2}{3} + \frac{7}{15} =$$

$$1 \frac{2}{15}$$

$$\frac{3}{5} + \frac{7}{10} =$$

$$1 \frac{3}{10}$$

$$\frac{1}{2} + \frac{7}{10} =$$

$$1 \frac{1}{5}$$



## Fractions with whole numbers

$$5 \frac{1}{3}$$

$$+ 8 \frac{1}{12}$$

---

$$13 \frac{5}{12}$$

$$14 \frac{1}{6}$$

$$+ 6 \frac{1}{3}$$

---

$$20 \frac{1}{2}$$

$$12 \frac{1}{4}$$

$$+ 7 \frac{13}{12}$$

---

$$20 \frac{1}{3}$$

$$15 \frac{1}{5}$$

$$+ 9 \frac{1}{3}$$

---

$$24 \frac{8}{15}$$

$$15 \frac{5}{6}$$

$$+ 7 \frac{3}{4}$$

---

$$23 \frac{7}{12}$$

$$5 \frac{1}{2}$$

$$+ 9 \frac{2}{3}$$

---

$$15 \frac{1}{6}$$

Adding whole numbers and fractions.

A whole number with a fraction is called a mixed number. The process is the same for the addition of mixed numbers.

$$\begin{array}{r} 6 \\ \frac{7}{12} \\ + \frac{1}{4} \\ \hline \end{array}$$

$$6 \frac{5}{6}$$

$$\begin{array}{r} 3 \\ \frac{5}{6} \\ + \frac{1}{3} \\ \hline \end{array}$$

$$4 \frac{1}{6}$$

$$\begin{array}{r} 5 \\ \frac{7}{8} \\ + 3 \\ \hline \end{array}$$

$$8 \frac{7}{8}$$

$$\begin{array}{r} 5 \\ \frac{7}{8} \\ + \frac{3}{4} \\ \hline \end{array}$$

$$6 \frac{5}{8}$$

Rewrite the following vertically:

$$1/3 + 9 + 1/5 =$$

$$9 \frac{8}{15}$$

$$1/4 + 1/5 + 7 =$$

$$7 \frac{9}{20}$$

# Review addition of fractions

Rename :

$$\frac{1}{3} = \frac{4}{12}$$

$$\frac{4}{5} = \frac{16}{20}$$

$$\frac{5}{6} = \frac{25}{30}$$

$$\frac{5}{8} = \frac{10}{16}$$

Reduce:

$$\frac{12}{16} = \frac{3}{4} \quad \frac{5}{15} = \frac{1}{3} \quad \frac{6}{9} = \frac{2}{3}$$

Reduce to whole or mixed numbers:

$$15/5 = 3 \quad 9/3 = 3 \quad 7/2 = 3 \frac{1}{2}$$

Add:

$$\begin{array}{r} 6 \frac{5}{6} \\ + 7 \frac{2}{3} \\ \hline \end{array}$$

$$14 \frac{1}{2}$$

$$\begin{array}{r} 9 \frac{1}{5} \\ + 15 \frac{7}{8} \\ \hline \end{array}$$

$$25 \frac{3}{40}$$

$$\begin{array}{r} 24 \frac{7}{10} \\ + 109 \frac{3}{5} \\ \hline \end{array}$$

$$134 \frac{3}{10}$$

$$\begin{array}{r} 8 \frac{3}{4} \\ + 12 \frac{1}{2} \\ \hline \end{array}$$

$$21 \frac{1}{4}$$

Subtraction with like denominators

$$9/10 - 8/10 =$$

$$1/10$$

$$5/6 - 3/6 =$$

$$2/6$$

$$7/10 - 5/10 =$$

$$2/10$$

$$11/12 - 6/12 =$$

$$5/12$$

$$75/100 - 25/100 =$$

$$50/100$$

$$9/16 - 5/16 =$$

$$4/16$$

Subtraction with unlike denominators. You use the same method as when you add fractions. You have to get the denominators the same or do the “newer” method taught in 7<sup>th</sup> grade math.

$$\begin{array}{r} \frac{3}{4} \\ - \frac{3}{8} \\ \hline 3/8 \end{array}$$

$$\begin{array}{r} \frac{5}{8} \\ - \frac{1}{4} \\ \hline 3/8 \end{array}$$

$$\begin{array}{r} \frac{11}{4} \\ - \frac{1}{2} \\ \hline 9/4 \end{array}$$

$$\begin{array}{r} \frac{15}{8} \\ - \frac{1}{4} \\ \hline 13/8 \end{array}$$

# Subtracting with mixed numbers

$$\begin{array}{r} 16\frac{3}{4} \\ - \frac{1}{12} \\ \hline \end{array}$$

$$16\frac{2}{3}$$

$$\begin{array}{r} 9\frac{3}{4} \\ - \frac{2}{3} \\ \hline 9\frac{1}{12} \end{array}$$

$$\begin{array}{r} 11\frac{3}{5} \\ - \frac{2}{10} \\ \hline \end{array}$$

$$11\frac{2}{5}$$

$$\begin{array}{r} 6\frac{3}{5} \\ - \frac{3}{10} \\ \hline 6\frac{3}{10} \end{array}$$

Subtraction from whole numbers. Before subtracting a fraction from a whole number, you must rename the whole number to an improper fraction.

$8 - \frac{1}{2} =$  First you must borrow from the 8, a whole fraction, which would be  $\frac{2}{2}$ . Then you can subtract  $7\frac{2}{2} - \frac{1}{2} = 7\frac{1}{2}$

$$\begin{array}{r} 15 \\ - \frac{1}{3} \\ \hline 14\frac{2}{3} \end{array}$$

$$\begin{array}{r} 9 \\ - \frac{9}{10} \\ \hline 8\frac{1}{10} \end{array}$$

$$\begin{array}{r} 26 \\ - \frac{5}{8} \\ \hline 25\frac{3}{8} \end{array}$$

$$\begin{array}{r} 58 \\ - \frac{7}{10} \\ \hline 57\frac{3}{10} \end{array}$$

Renaming with unlike denominators. Find the common denominators before subtracting mixed numbers.

$$\begin{array}{r} 17 \frac{1}{8} \\ - 9 \frac{1}{4} \\ \hline 7 \frac{7}{8} \end{array}$$

$$\begin{array}{r} 9 \frac{1}{3} \\ - 5 \frac{1}{2} \\ \hline 3 \frac{5}{6} \end{array}$$

$$\begin{array}{r} 19 \frac{1}{2} \\ - 10 \frac{1}{2} \\ \hline 9 \end{array}$$

$$\begin{array}{r} 24 \frac{1}{4} \\ - 15 \frac{2}{3} \\ \hline 8 \frac{7}{12} \end{array}$$

$$\begin{array}{r} 8 \frac{2}{3} \\ - 5 \frac{4}{5} \\ \hline 2 \frac{13}{15} \end{array}$$

$$\begin{array}{r} 9 \frac{1}{4} \\ - 7 \frac{1}{3} \\ \hline 1 \frac{11}{12} \end{array}$$

Review

$470,136 \div 456 = \underline{\hspace{2cm}}$

$581 - 487 = \underline{\hspace{2cm}}$

1031

94

$68 + 15 + 13 = \underline{\hspace{2cm}}$

$39 \times 46 = \underline{\hspace{2cm}}$

96

1794

$16,409 + 328 + 5176 + 17,464 = \underline{\hspace{2cm}}$

$25 \times 38 = \underline{\hspace{2cm}}$

39377

950

$21,875 - 21,799 = \underline{\hspace{2cm}}$

$2407 \times 908 = \underline{\hspace{2cm}}$

76

2185556

### Multiplying fractions and whole numbers

To multiply fractions from whole numbers, place the whole number over 1 (because it means one whole) and then reduce. You can reduce from top to bottom, not across. Then multiply across as usual.

$$4 \times \frac{1}{3} = 1 \frac{1}{3} \qquad 6 \times \frac{4}{5} = 4 \frac{4}{5}$$

$$18 \times \frac{5}{6} = 15 \qquad 24 \times \frac{3}{8} = 9$$

Multiplying fractions by fractions. Do the same method, reduce down first and then multiply across.

$$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9} \qquad \frac{3}{4} \times \frac{2}{5} = \frac{3}{10}$$

$$\frac{2}{5} \times \frac{3}{8} = \frac{3}{20} \qquad \frac{4}{5} \times \frac{3}{10} = \frac{6}{25}$$

$$\frac{2}{3} \times \frac{6}{7} = \frac{4}{7} \qquad \frac{5}{11} \times \frac{3}{10} = \frac{3}{22}$$

$$\frac{10}{3} \times \frac{9}{5} = 6 \qquad \frac{3}{4} \times \frac{2}{12} = \frac{1}{8}$$



Multiplying mixed numbers. First change the mixed number to an improper fraction, reduce down, then multiply.

$$4\frac{2}{3} \times 9 = 52$$

$$6\frac{1}{8} \times 16 = 98$$

$$8\frac{1}{3} \times 6\frac{3}{4} = 56\frac{1}{4}$$

$$2\frac{3}{4} \times 6\frac{2}{3} = 18\frac{1}{3}$$

Rename as mixed numbers:

$$\frac{10}{4} = \underline{\hspace{1cm}} 2\frac{1}{2}$$

$$\frac{16}{3} = \underline{\hspace{1cm}} 5\frac{1}{3}$$

$$\frac{21}{8} = \underline{\hspace{1cm}} 2\frac{5}{8}$$

Write as improper fractions

$$4\frac{1}{2} = \underline{\hspace{1cm}} \frac{9}{2}$$

$$7\frac{3}{4} = \underline{\hspace{1cm}} \frac{31}{4}$$

$$6\frac{3}{5} = \underline{\hspace{1cm}} \frac{33}{5}$$

Multiply

$$18 \times \frac{1}{2} = 9$$

$$21 \times \frac{2}{3} = 14$$

$$5\frac{1}{4} \times \frac{1}{3} = 1\frac{3}{4}$$

$$6\frac{2}{3} \times \frac{3}{4} = 5$$

Dividing fractions. You must invert the second number. To invert means to flip over.  
 $2$  inverted equals  $\frac{1}{2}$ .  $\frac{1}{3}$  inverted equals  $3$ .

Invert the following:

$$4 \text{ inverted} = \underline{\hspace{2cm}}$$

$$\frac{1}{4}$$

$$\frac{1}{4} \text{ inverted} = \underline{\hspace{2cm}}$$

$$4$$

$$\frac{2}{3} \text{ inverted} = \underline{\hspace{2cm}}$$

$$\frac{3}{2}$$

$$\frac{7}{8} \text{ inverted} = \underline{\hspace{2cm}}$$

$$\frac{8}{7}$$

Divide:

$$\frac{8}{9} \div 2 =$$

$$4/9$$

$$\frac{4}{5} \div 2 =$$

$$2/5$$

$$\frac{2}{3} \div 2 =$$

$$\frac{5}{11} \div 2 =$$

$$1/3$$

$$5/22$$

$$5 \div \frac{1}{2} =$$

$$21 \div \frac{7}{9} =$$

$$10$$

$$27$$

$$100 \div \frac{25}{32} =$$

$$63 \div \frac{9}{10} =$$

$$128$$

$$70$$

Dividing fractions by fractions. Remember invert the divisor, reduce down, and then multiply.

$$\frac{1}{4} \div \frac{1}{8} =$$

$$\frac{5}{12} \div \frac{3}{4} =$$

$$2$$

$$\frac{5}{9}$$

$$\frac{2}{9} \div \frac{3}{4} =$$

$$\frac{8}{27}$$

$$\frac{5}{64} \div \frac{5}{16} =$$

$$\frac{1}{4}$$

Mixed numbers. Convert to an improper fraction first and then invert, reduce, and multiply.

$$9 \frac{3}{4} \div 13 =$$

$$5 \frac{1}{4} \div 7 =$$

$$\frac{3}{4}$$

$$\frac{3}{4}$$

$$20 \div 1 \frac{1}{4} =$$

$$5 \frac{3}{5} \div 7 =$$

$$16$$

$$1 \frac{1}{3}$$

Change to improper fractions

$$4 \frac{1}{3} = \frac{13}{3}$$

$$5 \frac{2}{3} = \frac{17}{3}$$

$$8 \frac{5}{8} = \frac{69}{8}$$

$$25 \frac{3}{4} = \frac{103}{4}$$

Rename as mixed number

$$\frac{17}{3} = 5 \frac{2}{3}$$

$$\frac{19}{4} =$$

$$4 \frac{3}{4} \quad \frac{19}{6} = 3 \frac{1}{6}$$

$$\frac{17}{8} = 2 \frac{1}{8}$$

Reduce to simplest form

$$\frac{10}{15} = \frac{2}{3} \quad \frac{12}{18} = \frac{2}{3}$$

$$\frac{16}{40} = \frac{2}{5}$$

$$\frac{25}{35} = \frac{5}{7}$$

Add	$\begin{array}{r} 1489 \\ 6317 \\ \hline 7806 \end{array}$	$\begin{array}{r} 1289 \\ 2791 \\ \hline 4080 \end{array}$	$\begin{array}{r} 5096 \\ 2807 \\ \hline 7903 \end{array}$
Subtract	$\begin{array}{r} 1763 \\ 1449 \\ \hline 314 \end{array}$	$\begin{array}{r} 4526 \\ 1837 \\ \hline 2689 \end{array}$	$\begin{array}{r} 1750 \\ 1205 \\ \hline 545 \end{array}$
Multiply	$\begin{array}{r} 125 \\ 12 \\ \hline 1500 \end{array}$	$\begin{array}{r} 405 \\ 108 \\ \hline 43740 \end{array}$	$\begin{array}{r} 124 \\ 225 \\ \hline 27900 \end{array}$
Divide rewrite	$994 \div 14$ 71	$4800 \div 15$ 320	$4050 \div 18$ 225

9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x2</u> 18
7 <u>x6</u> 42	1 <u>x8</u> 8	9 <u>x6</u> 54	4 <u>x4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

Perform the operation indicated. Rewrite the fractions to make them easier to perform.

$\frac{3}{4} \times \frac{8}{9} = \frac{2}{3}$	$\frac{9}{10} + \frac{2}{3} = 1 \frac{17}{30}$	$\frac{2}{3} - \frac{1}{6} = \frac{1}{2}$	$8 \frac{1}{3} - 2 \frac{2}{5} =$  $5 \frac{14}{15}$
$6 \div \frac{1}{3} = 18$	$\frac{1}{3} \div 6 = \frac{1}{18}$	$7 \frac{1}{2} \div 3 = 2 \frac{1}{2}$	$9 - \frac{1}{3} =$ $8 \frac{2}{3}$
$12 - 2 \frac{2}{5} =$ $9 \frac{3}{5}$	$3 \frac{1}{3} \div 4 \frac{1}{6} = \frac{2}{5}$	$2 \frac{1}{2} \times 3 \frac{1}{5} = 8$	$5 \frac{3}{5} + 3 \frac{3}{4} =$ $9 \frac{7}{20}$

A									
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Now we have finished studying about fractions, we are going to learn about decimals. Line A is divided into 6 equal parts. Each part is one-sixth of a line A. Any fraction written like  $\frac{1}{6}$ , is called a common fraction because it has a numerator and denominator.

How many sixths are represented? 6 How many sixths make a whole? 6

B									
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Line B is the same length as line A, but line B is divided into ten equal parts. Each part is one-tenth of line B.

How many tenths are represented? 10 How many tenths make a whole? 10

The part  $\frac{1}{10}$  is also written .1 or .10 and is read one tenth (0.1). Or ten hundredths (0.10). This is known as a decimal. The period is called the decimal point.

In money we use decimals. \$4.25 can also be read, “four and twenty-five hundredths”.

When we read decimals, we use the word “and” for the decimal point. 6.33 means six and thirty-three hundredths.

How decimals are read:

.1 read one-tenth  
 .01 read one-hundredth  
 .001 read one-thousandth  
 .0001 read one-ten thousandth  
 .00001 read one hundred-thousandth  
 .000001 read one millionth

Read these decimals using and for the decimal point.

125.1	125.01	125.0001	125.000001
.05	.5	2236.1005	2647.0105
.0005	125.51	1788.001005	12.3456

Write the following decimals

Three-tenths \_\_\_\_\_ 0.3 \_\_\_\_\_

15 hundredths \_\_\_\_\_ 0.15 \_\_\_\_\_

25 thousandths \_\_\_\_\_ 0.025 \_\_\_\_\_

three-tenths \_\_\_\_\_ .3 \_\_\_\_\_

Five-tenths \_\_\_\_\_ .5 \_\_\_\_\_

25 hundredths \_\_\_\_\_ .25 \_\_\_\_\_

Adding decimals is the same as adding money. You line up the decimals. Add a few zeros to fill in the places if needed.

12.20+2.10+4.08+5.25=  23.63	8.05+1.3+.5+.002  9.852	3.+.07+14.6+7.3256  24.9956
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Decimal and common fractions. Every common fraction can be changed into a decimal.

One-tenth =  $1/10 = .1$

six and fifteen-hundredths =  $6 \frac{15}{100} = 6.15$

Write the fraction form or mixed number and the decimal form of the following numbers.

	Fraction form	Decimal form
Three-tenths	$3/10$	.3
Fifteen-hundredths	$15/100$	.15
Four and six-tenths	$4 \frac{6}{10}$	4.6
Fifteen and seven-tenths	$15 \frac{7}{10}$	15.7
Thirty and three-hundredths	$30 \frac{3}{100}$	30.03
One hundred twenty and two-thousandths	$120 \frac{2}{1000}$	120.002
Fifteen and fifteen ten-thousandths	$15 \frac{15}{10000}$	15.0015
Six and five-millionths	$6 \frac{5}{1000000}$	6.000005

Change each fraction to new fraction and then the decimal equivalent

$$\frac{1}{5} = \frac{2}{10} = .2$$

$$\frac{3}{5} = \frac{6}{10} = \underline{\hspace{1cm}}.6$$

$$\frac{4}{5} = \frac{8}{10} = \underline{\hspace{1cm}}.8$$

$$\frac{1}{2} = \frac{5}{10} = \underline{\hspace{1cm}}.5$$

$$\frac{1}{4} = \frac{25}{100} = \underline{\hspace{1cm}}.25$$

$$\frac{3}{4} = \frac{75}{100} = \underline{\hspace{1cm}}.75$$

$$\frac{7}{20} = \frac{35}{100} = \underline{\hspace{1cm}}.35$$

$$\frac{9}{25} = \frac{36}{100} = .36$$

Comparing decimals

The decimals .5, .50, .500, .5000, 0.5 all have the same value. They are equivalent. We can see that the zeros at the end of the decimal have no value. But zeros between the decimal point and any number have a distinct value. Thus .5, .05, .005, and .0005 are not the same.

Compare the numbers in each pair. Circle the one that is greater. If two are equal, circle both.

.3 and .30	.5 and .500	.035 and .35	.25 and .3
3.5 and 3.50	4.50 and 4.500	.125 and 14	.15 and .115
.625 and .6250	.035 and .03500	.26 and .3	.6 and .65

Write whether each number is equivalent

NUMBER EQUIVALENT OR NOT?		YES OR NO
One hundred twenty-five	.125	no
One and six-tenths	1.6	yes
Ten and one-fifth	10.5	no
Three-fourths	.34	no
Four and twenty-fifths	4.25	no

write as decimal fractions

$$1/10 = \underline{\hspace{1cm}} .10 \quad 3/10 = \underline{\hspace{1cm}} .3 \quad 1/2 = \underline{\hspace{1cm}} .5 \quad 3/4 = \underline{\hspace{1cm}} .75$$

Rename as common fractions

$$.3 = \underline{\hspace{1cm}} 3/10 \quad .20 = \underline{\hspace{1cm}} 1/5 \quad .25 = \underline{\hspace{1cm}} 1/4 \quad .75 = \underline{\hspace{1cm}} 3/4$$

Change to a mixed number

$$1.1 = \underline{\hspace{1cm}} 1 \frac{1}{10} \quad 1.5 = \underline{\hspace{1cm}} 1 \frac{1}{2} \quad 8.2 = \underline{\hspace{1cm}} 8 \frac{1}{5} \quad 6.25 = \underline{\hspace{1cm}} 6 \frac{1}{4}$$

Change to a mixed decimal (whole number and decimal)

$$3 \frac{1}{10} = \underline{\hspace{1cm}} 3.1 \quad 7 \frac{3}{5} = \underline{\hspace{1cm}} 7.6 \quad 2 \frac{1}{2} = \underline{\hspace{1cm}} 2.5 \quad 8 \frac{3}{4} = \underline{\hspace{1cm}} 8.75$$

Write the following as decimals:

$$\text{Six-thousandths} = \underline{\hspace{1cm}} .006 \quad \text{twelve hundred-thousandths} = \underline{\hspace{1cm}} .00012$$

$$\text{Fourteen-millionths} = \underline{\hspace{1cm}} .000014 \quad \text{four-hundredths} = \underline{\hspace{1cm}} .04$$

Place a decimal point and comma in the correct place in the following numbers

Three and three-tenths	3.3
Ten thousand forty and one hundred forty thousandths	10040.140
Three hundred fifty and fifty-hundredths	350.50
Twenty-three hundred thousandths (add zeros)	.000 23

Add

2.005+.15+.6+3.     5.755	.009+.14+.6+2.10   2.849	1.09+.036+.17+2.4   3.696
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Subtraction of decimals is the same for adding of decimals. Line up the decimals and then subtract as usual.

$5.498 - 2.362$  $3.136$	$7.54 - 6.38$  $1.16$	$7.05 - 3.135$  $3.915$
$6.2 - 4.575$  $1.625$	$1.52 - .408$ $1.112$	$1.354 - .265$  $1.089$
$92.15 - 84.7$  $7.45$	$8.14 - 6.1$ $2.04$	$1.9 - .674$  $1.226$

Using decimals and fractions

When working with fractions and decimals, the quantities must be made alike, either fraction or decimals. Convert your problems so that you are doing the same thing in your problem.

Mr Maryon has two vehicles. One car averages  $17\frac{1}{2}$  miles to the gallon for gas. The other car averages 28.4 miles per gallon. How many miles more per gallon does the second car average?

10.9

Yesterday apples sold for  $43\frac{1}{2}$  cents per pound. Today they sell for 43.8 cents a pound. How much is the increase?

.3 cents per pound increase

Collin had a piece of steel 2.6 inches wide. He filed it down to  $\frac{1}{8}$  inch. How wide was the piece of steel after he filed it down?

2.475

Evan had  $1\frac{3}{4}$  gallon of white paint. He mixed in 1.6 gallons of blue paint. How much light blue paint did he get?

3.35 gallons

It takes  $\frac{3}{4}$  hour to fly to Michigan. To drive to Michigan, it takes 3.9 hours. How much time is saved by flying?

3.15

Multiplying decimals. When we multiply decimals, we simply multiply as usual, and then count over how many places the decimal is in the multiplicand and the multiplier, add and then move that over in your final answer.

$$.33 \times 0.3 = .099$$

Multiply the following:

$\begin{array}{r} .28 \\ \underline{5} \\ 1.4 \end{array}$	$\begin{array}{r} 1.5 \\ \underline{8} \\ 12 \end{array}$	$\begin{array}{r} .84 \\ \underline{5} \\ 4.2 \end{array}$	$\begin{array}{r} 24 \\ \underline{.25} \\ 6 \end{array}$
$\begin{array}{r} 1.8 \\ \underline{.12} \\ 0.216 \end{array}$	$\begin{array}{r} 32 \\ \underline{1.5} \\ 48 \end{array}$	$\begin{array}{r} 1.7 \\ \underline{.15} \\ 0.255 \end{array}$	$\begin{array}{r} 1.7 \\ \underline{15} \\ 25.5 \end{array}$
$\begin{array}{r} .862 \\ \underline{2} \\ 1.724 \end{array}$	$\begin{array}{r} 1.63 \\ \underline{6} \\ 9.78 \end{array}$	$\begin{array}{r} 8.2 \\ \underline{12} \\ 98.4 \end{array}$	$\begin{array}{r} 70 \\ \underline{5.0} \\ 350 \end{array}$
$\begin{array}{r} .25 \\ \underline{.4} \\ .1 \end{array}$	$\begin{array}{r} .08 \\ \underline{.04} \\ 0.0032 \end{array}$	$\begin{array}{r} 5.6 \\ \underline{.02} \\ 0.112 \end{array}$	$\begin{array}{r} 4.68 \\ \underline{3.02} \\ 14.1336 \end{array}$
$\begin{array}{r} 25.02 \\ \underline{1.04} \\ 260.208 \end{array}$	$\begin{array}{r} 16.50 \\ \underline{2.8} \\ 46.2 \end{array}$	$\begin{array}{r} 13.7 \\ \underline{8} \\ 109.6 \end{array}$	$\begin{array}{r} 4.28 \\ \underline{5.01} \\ 21.4428 \end{array}$

Multiplying by 10,100,1000. If you forgot the shortcut in multiplying whole numbers by 10,100,100 and the like, look below.

$10 \times 5 = 50$

$100 \times 5 = 500$

$1000 \times 5 = 5000$

$10000 \times 5 = 50000$

As you can see, when multiplying by the above numbers, we simply add the same number of zeros as in the multiplier. For 100, we add two zeros, for 1000, we add three zeros, etc.

When multiplying with decimals, as in the example above, you move the decimal to the right the same amount of zeros. In 7, the decimal is after the seven so if you multiply  $7 \times 100$ , move the decimal two places to the right. 700.

$2.4 \times 10 = 24$

$.54 \times 10 = 5.4$

$5.4 \times 100 = 540$

$.24 \times 10 = 2.4$

Multiply the following by using this shortcut

$\begin{array}{r} 58 \\ \underline{10} \\ 580 \end{array}$	$\begin{array}{r} .58 \\ \underline{10} \\ 5.8 \end{array}$	$\begin{array}{r} 3.6 \\ \underline{10} \\ 36 \end{array}$	$\begin{array}{r} .058 \\ \underline{10} \\ .58 \end{array}$
$\begin{array}{r} 45 \\ \underline{10} \\ 450 \end{array}$	$\begin{array}{r} .83 \\ \underline{10} \\ 8.3 \end{array}$	$\begin{array}{r} 7.5 \\ \underline{10} \\ 75 \end{array}$	$\begin{array}{r} 5.4 \\ \underline{100} \\ 540 \end{array}$
$\begin{array}{r} .07 \\ \underline{100} \\ 7 \end{array}$	$\begin{array}{r} .7 \\ \underline{100} \\ 70 \end{array}$	$\begin{array}{r} .07 \\ \underline{100} \\ 7 \end{array}$	$\begin{array}{r} 2.8 \\ \underline{100} \\ 280 \end{array}$
$\begin{array}{r} 3.15 \\ \underline{100} \\ 315 \end{array}$	$\begin{array}{r} 3.15 \\ \underline{1000} \\ 3150 \end{array}$	$\begin{array}{r} .076 \\ \underline{10} \\ .76 \end{array}$	$\begin{array}{r} .076 \\ \underline{1000} \\ 76 \end{array}$
$\begin{array}{r} .007 \\ \underline{1000} \\ 7 \end{array}$	$\begin{array}{r} .076 \\ \underline{1000} \\ 76 \end{array}$	$\begin{array}{r} 719.35 \\ \underline{100} \\ 71935 \end{array}$	$\begin{array}{r} 25.25 \\ \underline{10} \\ 252.5 \end{array}$

## Word problems

Mr Maryon drives 6.2 miles to his work, one way. How far does he drive in 5 days going to work both ways??

62

Amy painted her home. She used 7 gallons of paint. The paint cost \$23.21 per gallon. How much did she spend?

162.47

Evan bought 5 quarts of oil at \$2.46 a quart and an air filter for \$8.97. What was the total that he spent?

21.24

Collin bought 43.5 feet of pipe for \$1.75 per foot. How much was the total?

76.13

Lauren worked 38.6 hours at her job last week. She earns \$12.25 per hour. How much did she earn?

472.85



Dividing decimals are solved exactly as whole-number division problems, except that the decimal point must be placed in the correct position.

Look at the following to examine how to do it.

$$\begin{array}{r} 9 \\ 2\overline{)18} \end{array} \quad \begin{array}{r} .9 \\ 2\overline{)1.8} \end{array} \quad \begin{array}{r} .09 \\ 2\overline{).18} \end{array} \quad \begin{array}{r} 9 \\ .02\overline{).18} \end{array} \quad \begin{array}{r} .009 \\ .02\overline{).00018} \end{array} \quad \begin{array}{r} .0009 \\ .2\overline{).00018} \end{array}$$

When inside the division box, place it directly up. When outside, count over the number of place values it is and then inside the box move it over that many place values. Place it directly up in your answer even before you divide.

Place the decimal point where it belongs

$$\begin{array}{r} 0.6 \\ 6\overline{)3.6} \end{array} \quad \begin{array}{r} .06 \\ .8\overline{).48} \end{array} \quad \begin{array}{r} .062 \\ 16\overline{).992} \end{array} \quad \begin{array}{r} .00031 \\ .23\overline{).00713} \end{array} \quad \begin{array}{r} 0.26 \\ 25\overline{)6.50} \end{array}$$

Divide, rewrite to do the above way.

$26.5 \div 5$ $5.3$	$1.92 \div 16$ $0.12$	$.0546 \div 9.1$ $0.006$	$478.4 \div .016$ $29900$
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Dividing smaller numbers by larger numbers.

Whenever the divisor is larger than the dividend, add as many zeros to the dividend as may be necessary –to the right of the decimal point.

Remember that adding zeros at the right does not change the value of decimal.

For ex:  $.1 = .10 = .100 = .1000$

$18 \div 75 =$  rewritten as  $75 \overline{)18.00}$   $\begin{smallmatrix} .24 \\ \end{smallmatrix}$

Remember how we changed a fraction to its decimal equivalent? Another way to do that is just to divide the numerator by the denominator. The fraction bar also means divide.  $\frac{1}{2}$  means 1 divided by 2. Which equals .50

Change each fraction to its decimal equivalent, by dividing the numerator by the denominator.

$\frac{3}{8}$ .375	$\frac{3}{5}$ .6	$\frac{7}{8}$ .875
$\frac{17}{100}$ .17	$\frac{13}{25}$ .52	$\frac{9}{20}$ .45

Sometimes when you divide the answer never terminates. It goes on forever. It is called nonterminating or repeating decimal. Quotients which do not terminate may be rounded off, usually to the nearest tenth or hundredth. To round off a decimal fraction:

- 1 Carry out the division to one more place than you need in your results.
- 2 If the digit that is to be dropped is less than 5, drop it and make no other change.
- 3 If the digit to be dropped is 5 or more, drop it and increase the digit to the left by 1

Round off the following to the nearest thousandth.

.1684 \_\_\_\_ .168 \_\_\_\_ .78952 \_\_\_\_ .79 \_\_\_\_ 4.12548 \_\_\_\_ 4.125 \_\_\_\_

Practice rounding off quotients to the nearest thousandth when necessary.

11.06÷431 0.026	.072÷.002 36	2842÷1.4 2030
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Dividing by 10,100,1000

Remember the shortcut for multiplying by the above numbers? Just move the decimal point over the same amount of zeros to the right. When dividing you just move the decimal point to the left the same number of zeros.

$$4.5 \div 100 = .045$$

11265.15÷100= 112.6515	275.3÷100= 2.753	6÷100= .06	.6÷100 .006
.5÷100=.005	125.3÷1000=.1253	642.5÷100=6.425	5÷100=.05

# Review

Multiply	$\begin{array}{r} .7 \\ \underline{.6} \\ .42 \end{array}$	$\begin{array}{r} .1 \\ \underline{.1} \\ .01 \end{array}$	$\begin{array}{r} .15 \\ \underline{.3} \\ 0.045 \end{array}$	$\begin{array}{r} .12 \\ \underline{.12} \\ .0144 \end{array}$
Multiply	$\begin{array}{r} 1.25 \\ \underline{30} \\ 37.5 \end{array}$	$\begin{array}{r} .015 \\ \underline{.14} \\ 0.0021 \end{array}$	$\begin{array}{r} 15.5 \\ \underline{2.12} \\ 32.86 \end{array}$	$\begin{array}{r} 7.05 \\ \underline{2.04} \\ 14.382 \end{array}$
$2.25 \times 100 = 225$	$.225 \times 100 = 22.5$	$22.5 \times 1000 = 22500$	$35.2 \div 100 = 3520$	$5.12 \div 1000 = 5120$
$2.4 \div 4 = 0.6$	$4.5 \div .15 = 30$	$.045 \div .15 = 0.3$	$.56 \div .014 = 40$	$3.6 \div .009 = 400$
$680 \div 17$ 40	$770 \div 35$ 22	$4900 \div 14$ 350	$11050 \div 26$ 425	$506 \div 23$ 22
Multiply	$\begin{array}{r} 234 \\ \underline{15} \\ 3510 \end{array}$	$\begin{array}{r} 1034 \\ \underline{27} \\ 27918 \end{array}$	$\begin{array}{r} 1840 \\ \underline{23} \\ 42320 \end{array}$	$\begin{array}{r} 109 \\ \underline{208} \\ 22672 \end{array}$

9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x2</u> 18
7 <u>x6</u> 42	1 <u>x8</u> 8	9 <u>x6</u> 54	4 <u>x4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

# Review

Multiply	$\begin{array}{r} .7 \\ \underline{3} \\ 2.1 \end{array}$	$\begin{array}{r} .7 \\ \underline{.4} \\ .28 \end{array}$	$\begin{array}{r} 1.25 \\ \underline{.04} \\ 0.05 \end{array}$
$\begin{array}{r} 3.5 \\ \underline{2.4} \\ 8.4 \end{array}$	$\begin{array}{r} 3.08 \\ \underline{12} \\ 36.96 \end{array}$	$\begin{array}{r} .025 \\ \underline{.04} \\ 0.001 \end{array}$	$\begin{array}{r} 2.075 \\ \underline{.08} \\ 0.166 \\ : \end{array}$
149.2x100=14920	1.776x1000=1776	.1910x10=1.910	64.5÷100=6450
Change and then multiply	12 ½ x .05=0.625	18.5 x ¼=4.625	.26x 2 <sup>2</sup> / <sub>5</sub> =0.624
$\begin{array}{r} 2.4 \div .4 \\ 6 \end{array}$	$\begin{array}{r} 3.6 \div .6 \\ 6 \end{array}$	$\begin{array}{r} .558 \div .18 \\ 3.1 \end{array}$	$\begin{array}{r} .621 \div .27 \\ 2.3 \end{array}$
Change to decimals	$\begin{array}{r} \frac{1}{4} \\ .25 \end{array}$	$\begin{array}{r} \frac{3}{4} \\ .75 \end{array}$	$\begin{array}{r} 1 \frac{1}{4} \\ 1.25 \end{array}$

Metric system is the most common system of measurement. The US is one of only a few that use the standard system. In the metric system all units of measurement have a uniform scale based on the number ten. Unlike the US system where 12 inches equal 1 foot and 3 feet equal 1 yard. The meter is the basic unit for measure of length in the metric system, gram for weight, and liter for capacity. The basic divisions of these units are tenths, hundredths, thousandths, etc. They are formed by adding prefixes: deci for tenths, centi for hundredths, and milli for thousandths. Higher denominations are formed by adding deca for ten, hector for one hundred, and kilo for one thousand.

Prefix	Meaning	Example
Kilo- Hector- Larger Units Deca-	1000 times the basic unit 100 times the basic unit 10 times the basic unit	1 kilometer=1000 meters 1 hectometer= 100 meters 1 decameter=10 meters
Deci- Centi- Smaller units Milli-	.1 times basic unit .01 times basic unit .001 times basic unit	1 decimeter= .1 meter 1 centimeter= .01 meter 1 millimeter= .001 meter

Complete the following table

Kiloliter	Hectoliter	Deciliter	Liter	Deciliter	Centiliter	Milliliter
.4683	4.683	46.83	468.3	4683	46830	468300
8.7210	87.21	872.10	8721.0	87210	872100	8721000
.0000091	.000091	.00091	.0091	0.091	.91	9.1
			25			
						61
28						
		381				

US Customary System			
Time	Length	Weight	Capacity
60 sec.=1 min. 60 min.= 1 hr. 24 hr.=1 day 7 days=1 wk. 12 mo.=1 yr. 10 yr.=1 decade 100 yr.=1 century	12 in.=1 ft. 36 in.=1 ft. 3 ft.=1 yd. 5280 ft.=1 mi. 1760 yd.=1 mi.	16 oz.=1 lb. 2000lb=1 T.	Dry 2 pt.=1 qt. 8 qt.=1 pk. 4 pk.=1 bu.  Liquid 8 fl.oz=1 c. 2 c.=1 pt. 2 pt.=1 qt. 4 qt.=1 gal.

Change to the indicated unit of measurement:

3 inches=\_\_\_\_\_ .25\_\_\_\_\_ foot      80 feet=\_\_\_\_\_ 960\_\_\_\_\_ inches.

64 meters=\_\_\_\_\_ 0.064\_\_\_\_\_ kilometers 5 centuries=\_\_\_\_\_ 50\_\_\_\_\_ decades

57 pounds=\_\_\_\_\_ 912\_\_\_\_\_ ounces 1 millimeter=\_\_\_\_\_ 0.001\_\_\_\_\_ liter

65.3 decagrams=\_\_\_\_\_ 653\_\_\_\_\_ grams 1 1/3 pints=\_\_\_\_\_ 2 2/3\_\_\_\_\_ cups

18 seconds=\_\_\_\_\_ .3\_\_\_\_\_ minute 1 megagram=\_\_\_\_\_ 1000000\_\_\_\_\_ grams

1 mile=\_\_\_\_\_ 63360\_\_\_\_\_ inches ½ fluid ounces=\_\_\_\_\_ .0625\_\_\_\_\_ cup



### Adding measures

7 hour 15 min <u>4 hour 45 min</u>  12 hr	1 week 5 days 18 hours <u>2 weeks 3 days 9 hours</u> <u>4 weeks 2 days 3 hours</u>
1 feet 4 inch <u>8 inch</u> 2feet	12 ft 10 inch <u>5 ft 4 inch</u> <u>18ft 2 in</u>
5 lb 6 oz <u>4 lb 10 oz</u>  10 lb	3 yards <u>7 inches</u> <u>43 inches</u>
3 T. 500 lbs <u>4 T. 1500 lbs</u> 8 T	10 hour 30 min <u>2 hour 30min</u> <u>13 hr</u>

### Subtracting measures

15 ft 9 in <u>5 ft 4 in</u> <u>10 ft 5 in</u>	5 yd 2 ft 8 in <u>2 yd 1 ft 6 in</u>  3 yrd 1 ft 2 in
5 gal. 3 qt. 1 pt. <u>2 gal 2 qt</u>  3 gal 1 qt 1 pt	8 ft. <u>16 inch</u>  80 inch
17 hour 15 min <u>8 hour 30 min</u> <u>8 hour 45 min</u>	18 lb 12 oz <u>14 lb 6 oz</u>  4 lb 6 oz

### Story problems

Greg is 20 years and 8 months old. His sister Julie is 2 years 10 months younger. How old is the sister?

17 yr 10 mo

Jim is 5ft 8 in tall. Kim is 4 ft. 10 in tall. The difference in their height is the length of Kim's foot. How long is Kim's foot?

10 inch

A trucker had a load of rock containing 2 tons. He unloaded 1 ton 1200 lbs. How much did he have left on the truck?

800 lbs

Mrs. Kim had a roll of shelf paper 9 meters long. She cut off a piece for the shelf 2.1 meters long. How much did she have left on the roll?

6.9

Multiplying measures. When multiplying compound or mixed measures, multiply each measure by the multiplier and change the answer when necessary.

$\begin{array}{r} 4 \text{ lbs. } 2 \text{ oz} \\ \times \quad 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \text{ mi. } 1330 \text{ ft} \\ \times 4 \\ \hline 33 \text{ mi } 40 \text{ ft} \end{array}$
24lbs 12 oz	
$\begin{array}{r} 3 \text{ gal. } 3 \text{ qt} \\ \times 4 \\ \hline 15 \text{ gal} \end{array}$	$\begin{array}{r} 10 \text{ lbs } 8 \text{ oz} \\ \times 4 \\ \hline 42 \text{ lbs} \end{array}$
$\begin{array}{r} 6 \text{ qt } 1 \text{ pt} \\ \times 4 \\ \hline 26 \text{ qt} \end{array}$	$\begin{array}{r} 3 \text{ yards } 1 \text{ foot} \\ \times 5 \\ \hline 16 \text{ yd } 2 \text{ ft} \end{array}$

I bought a chicken weighing 3 lbs 2 oz at \$.72 per pound. What was the total cost?

2.25

It took 7 hr. 30 min for us to drive the last 285 miles of our trip. How many miles per hour did we average?

38

Mr. Maryon bought a ham weighing 12 lb 10 oz at \$3.10 per lb. what did the ham cost Mr. Maryon?

39.14

Mrs. Maryon bought 5 yards and 18 inches of cloth. If she paid \$4.50 per yard, how much did it cost?

23.40

## Percents

Percent means hundredths. If you see a sign that says 20% off, it means that it can be purchased at .20 or 20% of the usual price. For example, if you can get a hat for \$3 and it is 20% off the price=  $3 \times .20 = .60$ . subtract .60 from 3 and you will pay \$2.80.

To change percent to decimals: move the decimal point 2 places to the left and drop the % sign.

20%= .20

Your turn:

30%=.30	70%=.70	5%=.05	8%= .08
90%=.90	66%=.66	37%=.37	40%=.40
1 %=.01	35%=.35	22%=.22	99%=.99

To change decimals to percent: move the decimal point two places to the right and add the % sign.

.15 = 15%                      .1= 10%

.10=10%	.40=40%	.60=60%	.75=75%
.09=9%	.45=45%	.09=9%	.65= 65%
.125=12.5% or 12 ½ %	.375=37.5%	.085=8.5%	.015=1.5%

### Changing fractions to percents

To change any fraction to percent, first change the fraction to a decimal by dividing the numerator by the denominator. Then change the decimal to percent by moving the decimal point two places to the right and adding the percent sign.

Change  $\frac{1}{5}$  to decimal form.

$$\frac{1}{5} = .20 \text{ or } 20\%$$

Change the following to percents

$\frac{1}{2}$ 50%	$\frac{1}{4}$ 25%	$\frac{3}{4}$ 75%
$\frac{4}{5}$ 80%	$\frac{7}{10}$ 70%	$\frac{9}{10}$ 90%
$\frac{3}{5}$ 60%	$\frac{3}{10}$ 30%	$\frac{2}{5}$ 40%

The above has produced even results when dividing, other fractions can be changed to decimals if the division is carried out more than two places.

$\frac{1}{8}$  to a percent

$$.125 = 12.5\% \text{ or } 12 \frac{1}{2} \%$$

$$\frac{1}{8} = \frac{1.25}{10} = .125$$

Change the following to percents

$\frac{3}{8}$ 37.5%	$\frac{7}{8}$ 87.5%	$\frac{5}{12}$ 41.66%
$\frac{3}{16}$ 18.75%	$\frac{5}{16}$ 31.25%	$\frac{11}{16}$ 68.75%

You can convert any fraction to a percent, regardless of what it amounts to when dividing. Divide out to four decimal places to the right. Then convert to a percent by moving decimal over two places. Then round to the nearest tenths.

$$\begin{array}{r} .2857 \\ 7 \overline{)2.0000} \end{array} = 28.57\% = 28.6\%$$

Change the following fractions to decimals and then to percents. Round off any remainders to the nearest tenth.

$\frac{1}{7}$ 14.3%	$\frac{3}{7}$ 42.9%	$\frac{5}{7}$ 71.4%
$\frac{1}{9}$ 11.1%	$\frac{4}{9}$ 44.4%	$\frac{7}{9}$ 77.8%
$\frac{1}{12}$ 8.3%	$\frac{5}{12}$ 41.7%	$\frac{5}{6}$ 83.3%

Percent	decimal	fraction
1%	0.01	1/100
5%	.05	5/100
10%	.10	1/10
12 ½%	0.125	1/8
20%	.2	1/5
25%	.25	¼
33 1/3%	.33	1/3
50%	.5	½
75%	.75	¾
80%	.8	4/5
90%	.9	9/10
99%	.99	99/100
100%	1	1
125%	1.25	5/4
150%	1.5	1 ½
200%	2	2

When solving percents remember that the word “of” means multiply.  
 50% of 60 to solve you take  $.50 \times 60 = 30$

Your turn:

25% of 400 100	20% of 60 12	35% of 60 21	60% of 160 156
37 ½ % of 80 30	21% of 200 42	14% of 500 70	26% of 150 39
22% of \$16,000 3520	8% of \$21,000 1680	40% of \$15,000 6000	29% of \$12,000 3480

Percents larger than 100%. Do the same thing, change the percent to decimal by moving the decimal point 2 places to the left and then dropping percent sign.

300%= 3                      125%= 1.25

Your turn:

Change percents to decimals:

150% 1.5	175% 1.75	199% 1.99	162.5% 1.625
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Find the percent of each number:

100% of 20 20	200% of 20 40	500% of 120 600	110% of 100 110
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Percent smaller than 1 %

Change  $\frac{3}{4}$  % to a decimal first divide the fraction .75 and then move the decimal two places to the left .0075.

Your turn:

Change the fractional percents to decimals:

$\frac{1}{4}$ % .0025	$\frac{2}{5}$ % .0040	$\frac{1}{8}$ % .00125
$\frac{5}{12}$ % .00417	$\frac{7}{10}$ % .007	$\frac{1}{20}$ % .0005

Find the following numbers:

$\frac{1}{2}$ % of 200 100	$\frac{1}{4}$ % of 400 100	$\frac{3}{4}$ % of 800 600
$\frac{3}{8}$ % of 400 150	$\frac{1}{10}$ % of 500 50	$\frac{2}{5}$ % of 500 200

### Finding commissions and net amounts

To find the amount of commission, multiply the amount sold or collected by the rate of commission. To find the net proceeds, subtract the commission from the original amount.

Caleb Jones is an attorney. Sometimes he collects bad debts for his clients. Last week he collected a debt of \$4000 and charged a fee (commission) of 15%. How much did the client receive?

3400

Greg sold a house for \$77,600. He paid the real estate agent 5% for the sale. How much did he receive or net from the sale?

73720

An appliance sales agent sold 2 stoves at \$445 each and 2 lamps at \$65 each. She was paid a commission of 10%. How much did the store net?

918

Tammy recently inherited \$9800 from one of her relatives. The inheritance was taxed at a rate of 18%. How much did Tammy net from the inheritance?

8036

### Percents of decrease and increase

Greg bought a car last year for \$7000. When he tried to sell it this year, he found that the value of the car had decreased 20%. At what price is the car valued this year?

5600

The storekeeper decreased by 20% the price of a coat which had been marked \$45. What was the sale price?

36

Last year we had a total rainfall of 28.8 inches. This year there has been a decrease of 25%. How much is this year's rainfall?

21.6

Kim Jones raised 3200 bushels of corn this last year. Because of better weather conditions she expects to raise 25% more this year. How many bushels does she expect to raise this year?

4000

Lauren was making \$212.89 a day and was given a 10% increase. How much does she get with the increase?

234.18

This month Paul increased his sales by 20% over last month. He sold \$22,500 worth of merchandise last month. How much did he sell this month?

27000

### Simple interest

Interest is a fee paid for the use of money. Interest is always figured on the basis of a year. The percent of interest is called the rate. The money involved is called the principal. The number of years involved is called the time. The interest formula is  $I = prt$  (interest equals principal times rate times time.)

Using the same formula, find the interest on each of the following sums:

\$500 at 5% for 1 year 25	\$225 at 6% for 1 year 13.5	\$500 at 6% for 1 year 30
\$700 at 9% for 1 year 63	\$1000 at 7.75% for 1 year 77.5	\$350 at 6% for 1 year 21

If you have less than a year, you convert the time into a fraction.

$I = prt$

$\$400 \times 5\frac{1}{2}\% \times 3 \text{ mo} = 400 \times .055 \times 0.25 \text{ or } \frac{1}{4} = \$5.50$

Your turn:

\$300 at 6% for 4 months 4.5	\$600 at $5\frac{1}{4}\%$ for 10 months 26.25	\$600 at $10\frac{1}{2}\%$ for 4 months 15.75
\$225 at $5\frac{1}{2}\%$ for 8 months 7.88	\$800 at 9% for 9 months 54	\$600 at 18% for 7 months 63

### More interest

When you leave the interest in the bank, it is added to the old principal at the end of the year. Thus there is a new and larger principal for the following year. So when you figure interest for more than one year, you do like we previously did for one years time. Then you take the interest and add it to the principal and figure the remaining amount of time.

Find the interest earned for the following amounts:

\$150 at 6% for 2 years 18.54	\$325 at 6% for 2 years 40.17	\$1200 at 8% for 2 years 160.80
\$400 at 5 ½ % for 2 years 45.21	\$450 at 6% for 2 years 55.62	\$600 at 5% for 2 years 61.50

In many savings accounts, interest earned during a period is added to the account to form a new principal. The interest for the next period is earned on this new principal. This process of paying interest on interest is called compound interest. In simple interest, interest is paid on the principal only. In compound interest, interest is paid annually, semiannually, quarterly, or daily.

Find the compound interest amount in the following:

Amy has \$300 in the savings bank and is paid 8% semiannually. How much will she have at the end of the year? 324.48	Jentzen has \$500 in savings and is paid 6% semiannually. How much will he have at the beginning of the second year? 562.75	Mrs. Maryon has \$1600 in a savings account paying 5.5% interest compounded quarterly. How much will she earn for the year? 1689.83
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### **Finding part of a number**

Susan inherited 25% of the \$9000 estate of her mother. What was Susan's share? (remember of means multiply.  $25\% \times 9000 = .25 \times 9000 = 2250$ .)

A flat screen tv which regularly sells for \$485 is on sale for 20% off. What is the sale price?

388

Evan earns \$232.50 per week. He saves 10% each week. How much will he save in one year?

1209

Mr. Maryon is paid 10% of his sales. Last month he sold \$12,250 worth of goods. How much was his commission?

1225

### **Finding a number from its percent**

Green river association was hoping to collect a certain amount of money for the park. Only 80% of the goal was collected. The amount to be collect was \$2400. How much was the goal that they set originally?

Take 2400 and divide by 80% =  $2400 \div .80 = 3000$

Stephen has \$645 in his savings. This is 14% less than he had a year ago. How much did he have a year ago?

750

Kim bought a dress at a 25% off sale. She paid \$168 for the dress. What was the original price?  
224

Mr. Smith bought a car for \$8670. This was 15% off the original price. What was the original price? (for this, subtract the discount 15 from 100 and then take that amount and divide by the sale price.

10200

Brooklyn bought a purse at a 20% off sale for \$11.92. what was the original price?

14.90

Finding percent of one number to another

To find what percent one number is of another number, express as a fraction, then divide and change to percent.

I bought a \$30 shirt for \$24 at a sale. What percent discount did I get?

\$30-\$24 is what percent of \$30? \$6 percent discount  $6/30 = .20 = 20\%$

By paying cash, Matthew bought a coat for \$360. Otherwise it would have cost him \$400. What percent did he save?

10%

Jean paid \$22.50 for a purse which had been marked \$60. What percent did she save?

62.5%

15 is 75 % of 20

25 is 42 % of 60

17 is 34 % of 50

6 is 15 % of 40

40% of 250 is 100

25% of 40 is 10

50% of \$21.50 is 10.75

9 is 9 % of 100

2 % of 2000 is 40

16 is 25 % of 64

### Area of a rectangle

To find the area of a rectangle, multiply the length times the width. Remember to get both amounts in the same unit.

How many square feet is Miriam's garden which measures 160 ft by 120 ft?

19200ft

Mr. Kenny wishes to have his yard sodded. The yard is 60 ft by 40 ft. how many square feet of sod does he need?

2400

Find the cost at \$7.50 per square yard, of laying a concrete walk 100 yd long and  $1\frac{1}{2}$  yd wide. Find the area first then the cost.

1125

The living room has a 9x12 rug on it. The area I need covered is 13 ft by 16 ft. how many square feet of floor are not covered by the rug? First find the total floor area and then subtract the rug area.

100



Finding the volume

To find the volume of a figure multiply the length by width by height. They have to be all in the same units.

Our pool is 45 feet long and 30 feet wide. If it is filled to a depth of 6 ft, how many gallons of water does it hold?

8100

How many bushels of apples can be stored in a bin 8ft wide by 10 ft long and 5 ft deep?

400

Our car has a gas tank that measures 21 in by 11 in by 10 in. How many gallons will it hold?

2310

Collin had a concrete floor laid at \$9 per square yard. The floor measures 36 feet by 50 feet. How much did it cost?

16200

How much dirt have to removed to make a basement measuring 25 ft by 27 ft by 8 ft?

5400

A triangle is a figure with three sides. The perimeter of a triangle is the sum of all three sides. The area of a triangle is  $\frac{1}{2}$  of the base times the height.  $A = \frac{1}{2} b h$

What is the area of a triangle whose base is 16 ft and altitude is 20 ft?

160ft

The gable of a barn forms a triangle. If a gable is 10 ft high and the barn is 30 ft wide (base) how many square feet in the gable?

150ft

What is the perimeter of an isosceles triangle whose two sides are 8ft and 6 ft long?

22

What is the perimeter of an equilateral triangle whose one side is 10 inches?

30

Circle

The perimeter of a circle is called the circumference. A straight line drawn through the center is called the diameter of the circle. A straight line from the center to the circumference (outer edge) is called the radius. The radius is  $\frac{1}{2}$  of the diameter.

How much is the radius of a circle when the diameter is 12 inches?

6

How much is the diameter of a circle whose radius measures 4.5 inches?

9

To find the circumference of a circle multiply  $\pi$  times the diameter.  $\pi = 3.14$  or  $\frac{22}{7}$

Find the circumference of a circle whose diameter is 3.5 meters?

10.99

The zoo has a circular pool for its otters. The pool's diameter is 28 ft. how much fence will be needed to enclose the pool?

87.92

Area of a circle. The formula for finding the area of a circle is  $\pi r^2$  3.14 x radius squared. Remember the radius is half the diameter.

When diameter is 14, how much is r?

7

Find the area of a circle that has a radius of 3.5 inches?

38.47

A painter needs to know the area of a circular dance floor in order to know how much paint to buy. What is the area of the floor that has a diameter of 42 feet?

1384.74

### Cylinder

We know the area of a circle  $A = \pi r^2$ . If we multiply the base area by height we shall have the volume of cylinder. Therefore the formula for finding the volume of a cylinder is  $V = \pi r^2 h$

A gasoline storage tank has a diameter of 28 ft and height of 30 ft. If 1 cu ft holds about 7.5 gallons, how many gallons will the tank hold?

$18463.20 \times 7.5 = 138474$

The vet uses a syringe for injecting vaccine. If the syringe is 2 centimeters across and filled 3.5 centimeters deep, how many cubic centimeters of vaccine does it hold?

10.99

## Review

Find the perimeter and area of the rectangles

l	w	P	A
30	18	96	540
15	9	48	135

Find the volume of the rectangular prisms

l	w	h	V
10	12	15	1800
8.5	10	10	850

Find the area of the triangles

a	b	A
15	10	75
22	12	132

Find the circumference of the circles

r	d	C
6	12	37.68
25	50	157

Find the area of the circles

r	d	A
14	28	615.44
7	14	153.86

Find the volume of the cylinders

r	h	V
7	10	1538.60
5	14	1099

Finding the missing factors. When multiplying two or more numbers each number is called a factor.

Fill in the missing factors.

$$\underline{\quad} 8 \underline{\quad} \times 4 = 32$$

$$\underline{\quad} 45 \underline{\quad} \div 15 = 3$$

$$\underline{\quad} 75 \underline{\quad} \div 15 = 5$$

$$6 \times \underline{\quad} 5 \underline{\quad} = 30$$

$$120 \div \underline{\quad} 12 \underline{\quad} = 10$$

$$\underline{\quad} 98 \underline{\quad} \div 14 = 7$$

You can find any missing factor to a problem if the product and all other factors are known.

For ex. The area of a rectangle is 480 sq ft. the length is 24 ft. what is the width? We know that  $A = lw$  so we plug in the numbers  $480 = 24 \times (w)$  we get  $w$  by itself divide each side by 24 and it cancels out on the one side and leaves you with  $480/24$ , which equals 20.

Your turn:

Mr. Skip knows that the parking lot measures 85,000 sq ft. He also knows that it measures 340 ft wide. How long is it?

250

Sia paid \$26 interest on a loan of \$200 for 1 year. What rate of interest did she pay?

13%

9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x 1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x 1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x 9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x 2</u> 18
7 <u>x 6</u> 42	1 <u>x 8</u> 8	9 <u>x6</u> 54	4 <u>x 4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x 9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

## Distance formula

$D = \text{rate} \times \text{time}$

If we average 45 miles per hour for 5 hours, how many miles did we travel?

225

On our vacation, we average 45 miles per hour. At this rate, how far did we travel in 8 hours and 20 minutes?

375

How far can you travel in 12 hours, if your average speed is 15 mph on a bike?

180

## Equations

An equation is a statement of equality. Thus  $2x+2=4$  is an equation.  $A=1/2bh$  is a formula not an equation. A formula applies to any situation to solve it, an equation applies only to a particular situation. When solving equations, you may change the form of the equation by addition, subtraction, multiplication, or division as long as you perform the same operation on both sides of the equation.

Jim's father is three times as old as Jim. The sum of their ages is 76 years. How old is each?

Let  $a$  = Jim's age.

Then,  $3a$  = Father's age

Then,  $a + 3a = 76$

$4a = 76$

$a = 76 \div 4$

$a = 19$

$3a = 57$

Your turn:

Together Jady and Brooklyn have \$4.80. Jady has three times as much as Brooklyn. How much does each have? Jady= $3a$ Brook= $a$ $3a + a = 4.80$ 1.20b 3.60j	Autumn is twice as old as her sister. The sum of their ages is 63 years. What is the age of each? Autumn= $2b$ Sister= $b$ $B + 2b = 63$ Sister = 21, autumn 42	Amy and Jeff inherited an estate of \$15,000. Amy is to receive three times as much as Jeff. How much does each receive?  Amy= $11250$ Jeff = $3750$
---	---	---

Simplifying equations by combining similar terms. Remember what you do to one side, you have to do to the other side.

$5x + 3 = 18$ $5x = 15$ $x = 3$	$3x + 3 = x + 5$ $2x = 2$ $x = 1$	$3x - 2 = 2(x + 2)$  $x = 6$
$2x - 9 = x + 1$ $x = 10$	$7x - 4 = 3x$ $-4 = -4x$ $x = 1$	$3(x + 2) = x + 8$ $x = 1$

Now let's solve for the letter

$5a + 4a = 45$ $a = 5$	$23a + 27a = 100$ $a = 2$	$17z + 12z = 87$ $z = 3$
$12x + 5x = 51$ $x = 3$	$8a - 5a = 60$ $a = 20$	$14m - 6m = 80$ $m = 10$



Using simple equations

Bill and Linda have \$250 together. Bill has \$10 more than 3 times as much as Linda. How much does each have? Let  $x$  = Lisa's money. Then  $3x + 10$  = bills money. Now solve

Lisa 60

The perimeter of a yard is 600 yards. The length of the yard is twice as great as the width. What are the dimensions of the yard?

100 x 200

I am thinking of a number. Five times that number equals 240. What is the number?

48

Jill has five times as much money as does Harry. Together they have \$42. How much does each have?

7

Jim's mother is 3 times as old as Jim. The sum of their ages is 72 years. How old is each?

18

If 24 is added to a certain number, the result is 52. What is the number?

28

## Ratios

Ratios are a comparison of two similar quantities by division. For ex. If we say that Collin is 20 years old and his brother Stephen is 10 years old. The ratio of Collin's age to Stephen's age is 20 to 10 or 2 to 1 or 2:1 or  $\frac{2}{1}$ .

Make sure when you write ratios, you understand which amount is being compared to the other, meaning which amount is the numerator of your fraction.

Your turn:

A tree is 60 ft tall, and a nearby telephone pole is 20 ft tall. What is the ratio of the height of the tree to that of the pole?

60:20

Mr. Timms spent \$5400 on rent and \$2400 on utilities last year. What was the ratio of rent to utilities?

5400:2400

Our maple tree is 30 feet tall, while our neighbor's maple tree is 20 feet tall. What is the ratio of the maple in our yard to our neighbors?

30:20

When two ratios are equal, they are said to form a proportion.

In the ratio 1 to 2 and 4 to 8 they form proportions. You can also write them 1:2 and 4:8 .

In the proportion 1:2= 8:16 notice that  $1 \times 16 = 2 \times 8$  that is, the product of the means equals the product of the extremes. This is true in all proportions.

Find the missing terms in each proportion below:

5:10=10: w W=20	5:12=10:w W=24	3:12 =10:w W=90
X:20=4:5 X=16	X:3=10:15 X=2	6:7=x:14 X=12

Because proportions can often be written in fraction form, we study the solving of fractional equations. The proportion  $4:5= 8:x$  can be written  $\frac{4}{5}=\frac{8}{x}$

Using the rule above, the product of the means equals the product of the extremes, we find that  $4x=40$  or  $x=10$ . Or, the numerator of one fraction is multiplied by the denominator of the other fraction. Also called cross multiplication.

Solve the following:

$\frac{7}{5}=\frac{7}{5}$	$\frac{2}{12}=\frac{1}{6}$	$\frac{16}{48}=\frac{1}{3}$
$\frac{5}{10}=\frac{7}{14}$	$\frac{15}{9}=\frac{5}{3}$	$\frac{10}{6}=\frac{5}{3}$
$\frac{9}{12}=\frac{3}{4}$	$\frac{15}{40}=\frac{3}{8}$	$\frac{35}{14}=\frac{50}{x20}$
$\frac{21}{75}=\frac{7}{25}$	$\frac{20}{19}=\frac{30}{x28.50}$	$\frac{5}{1}=\frac{30}{x6}$

We can use proportion solving in real life by doing the same method. Just make sure you line up the correct terms on each side. If oranges are on top, then keep oranges on the other top.

Lauren buys 6 feet of wire for \$21.66. How much would 10 feet of the same wire cost? Do a proportion problem to solve this. Keep wire across from each other on the same parts.

36.10

Tim bought 3 yards of fabric for \$12.75. How much would 5 yards of the same fabric cost?

21.25

Mom bought a 14 oz bottle of ketchup for 77 cents. At the same rate, how much would a 20 oz bottle cost?

1.10

A picture 7 x 12 inches is enlarged so that the 7 inch side will be 14 inches. What will the other dimension of the enlarged picture be?

24

Round each number as directed:

Round 8,621 to the hundreds place \_\_\_\_\_ 8600

Round 5,099,620 to the nearest million. \_\_\_\_\_ 6,000,000

Round 46,055 to the nearest ten thousand \_\_\_\_\_ 50,000

Round 10,562 to the nearest thousand \_\_\_\_\_ 11,000

What is the VALUE of the number 5 in the following numbers:

5,234 \_\_\_\_\_ thousand      4,235 \_\_\_\_\_ ones      3,250 \_\_\_\_\_ tens \_\_\_\_\_

What is the total of 36,974,48,6, and 15? \_\_\_\_\_ 188

How much more is 419,003 and 12,018? \_\_\_\_\_ 406985

Find the difference from 37,500 and 18,642. \_\_\_\_\_ 18858

Find the product of 15, 663 and 8 \_\_\_\_\_ 125304

Divide 712,000 by 25 \_\_\_\_\_ 28480

Mr. and Mrs. Maryon are remodeling their kitchen. They spent \$548 for new cabinets and \$618 on plumbing. The tiles for the kitchen floor will cost \$3 each. If they need 240 tiles, how much will the tiles cost?

720

This week, Nick earned \$456 as an administrative assistant. Last month, he earned \$2112 at the same job. If he is paid \$12 an hour, how many hours did he work this week?

38

A camera is regularly priced at \$89. The sale price for this weekend is \$59. Rick buys the camera at the sale using a \$10 off coupon. How much does he pay for the camera?

49

Sally's weekly gross salary is \$615. If \$172 is taken out for taxes and \$35 is taken out for other deductions, what is the amount of Sally's weekly take home salary?

408

Alan buys a computer and pays for it in 24 equal monthly installments. If each installment is \$78, how much will he pay in all for the computer?

1872

What is the value of  $40(50 - 5 \times 2)$ ?

160

Change each improper fraction to a whole or mixed number:

$\frac{7}{2} =$ 3 $\frac{1}{2}$	$\frac{10}{3} =$ 3 $\frac{1}{3}$	$\frac{42}{6} =$ 7	$\frac{9}{2} =$ 4 $\frac{1}{2}$
$\frac{77}{9} =$ 8 $\frac{5}{9}$	$\frac{19}{4} =$ 4 $\frac{3}{4}$	$\frac{15}{3} =$ 5	$\frac{25}{5} =$ 5

Reduce each fraction to lowest terms:

$\frac{2}{4} = \frac{1}{2}$	$\frac{6}{8} =$ $\frac{3}{4}$	$\frac{5}{20} =$ $\frac{1}{4}$	$\frac{24}{36} =$ $\frac{2}{3}$
$\frac{6}{9} =$ $\frac{2}{3}$	$\frac{10}{25} =$ $\frac{2}{5}$	$\frac{8}{16} =$ $\frac{1}{2}$	$\frac{7}{42} =$ $\frac{1}{6}$

Paul earns 10 vacation days per year. He has used  $4\frac{1}{2}$  days this year. How many vacation days does he have left?

5.5

Marie planned to spend  $3\frac{1}{2}$  hours organizing the stockroom. She has been working for  $1\frac{3}{4}$  hours. How many more hours does she plan to work on this task?

1.75

Bob kept records of how much gas he purchased this month. He bought  $8\frac{1}{2}$  gallons,  $9\frac{3}{10}$  gallons, and  $8\frac{7}{10}$  gallons. How many gallons did he buy this month?

26.5

A furniture factory has a stack of 40 tabletops. If each tabletop is  $1\frac{3}{4}$  inches thick, what is the height of the stack?

70

A stack of books is 24 inches high. Each book in the stack is  $\frac{3}{4}$  inch thick. How many books are in the stack?

18

You have 10 cups of sugar. Your cookie recipes calls for  $1\frac{1}{4}$  cups of sugar for one batch. What is the greatest number of batches of cookies you can make with the sugar you have?

8

A cook uses  $\frac{1}{3}$  pound of hamburger to make the lunch special. How many specials can he make from 15 pounds of hamburger?

45

Kim works part time in a toy store as a bike assembler. She can build a bike in  $2\frac{1}{2}$  hours. If she works 25 hours per week, how many bikes can she assemble?

62.5

Amy cuts a piece of ribbon that is  $2\frac{3}{4}$  yards long into 3 equal pieces. What is the length of the pieces?

.92  $\frac{11}{12}$

Richard has 4 cups of flour and uses  $\frac{2}{3}$  of it for a recipe. How many cups of flour are left?

$3\frac{1}{3}$

At Tammy's Café the cook uses  $\frac{1}{3}$  cup of gravy on each serving of mashed potatoes. How many servings can she make from 12 cups of gravy?

36



Write the following in words:

5.25	Five and twenty-five hundredths
6.008	Six and eight thousandths
0.37	Thirty-seven hundredths
1.01	One and one hundredths
2.005	Two and five thousandths
0.08	Eight hundredths
12.6	Twelve and six tenths
4.05	Four and five hundredths

Round 3.5719 to the tenths place\_\_\_\_\_ -3.6

Round 5.132 to the hundredths place\_\_\_\_\_ 5.13

Round 0.543 to the ones place\_\_\_\_\_ 1

Round 7.0813 to the tenths place\_\_\_\_\_ 7.1

Round 1.0699 to the thousandths place\_\_\_\_\_  
1.07

$$3.15 + 2.816 + 4.05 + 0.3 =$$

$$10.316$$

$$16.05 - 4.27 =$$

$$11.78$$

$$39.05 - 15.7 =$$

$$23.35$$

$$14.01 + 8.6 + 0.058 =$$

$$22.668$$

$$1.07 \times 12 =$$

$$12.84$$

$$0.09 \times 61 =$$

$$5.49$$

$$6.3987 \div 1.05 =$$

$$6.094$$

9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x2</u> 18
7 <u>x6</u> 42	1 <u>x8</u> 8	9 <u>x6</u> 54	4 <u>x4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

Mary ordered 14 parts that cost \$2.99 per part. How much was the total order?

41.86

A breakfast cereal cost \$4.23 a box. It contains 18 servings. What is the cost for one serving?

.24

A brand of hot cereal costs  $6\frac{1}{2}$  cents per serving. What is the price of a box containing 24 servings?

1.56

What is the cost per pound of a 20 pound bag of dog food that sells for \$12.75?

.6375

If gasoline sells for \$2.29 per gallon, how much would  $3\frac{1}{2}$  gallons cost?

8.02

A can of beans contains  $40\frac{1}{2}$  ounces. If one serving is 3.75 ounces, how many servings are in one can?

10.8

Sam bought a laptop that costs \$1620 and made a down payment of  $\frac{1}{4}$  of the cost. How much was the down payment?

405

How much would 2.6 pounds of Swiss cheese cost at \$4.86 per pound?

12.64

A package of ground sirloin costs \$8.24. If the price per pound is \$3.45, how many pounds of ground sirloin are in the package, rounded to the nearest tenth of a pound?

2.4

On a test, a student got 80% of the items correct. If the student got 56 items correct, how many items were on the test?

70

Eighty percent of the IHappy employees are drivers. If there are 300 drivers in the company, how many employees work for IHappy?

375

16 is what percent of 80?

20%

Find 3% of 500=

15

Find 85% of 140=

119

What is 45% of \$10.80?

4.86

What is 75% of 80?

60

Evan supervises a loading dock. He needs to have 140 cartons loaded on a truck for delivery. By lunch, 119 cartons have been loaded. What percent of the job is finished?

85

Stan was given a raise. His new monthly pay is \$1508. Previously, his monthly pay was \$1450. What percent raise did he receive?

.96

Greg took a test with 50 items. He answered 44 of the items correctly. What percent of the test items did he answer correctly?

.88

Mike bought some stereo equipment for \$150 plus 5% sales tax. How much sales tax did he pay?

7.50

Collin wants to leave a 15% tip on a \$20 restaurant bill. How much money should he leave for the tip?

3

Jeff's insurance paid \$7500 for his surgery. If the insurance paid 80% of the total bill, what was the amount of the bill?

6000

Last year Kim paid 15 % of her annual income in federal income tax. If her tax bill was \$3555 what was her annual income?

23700

Sam buys an insurance policy that costs \$7.43 for every \$2500 of insurance. If he buys a policy worth \$30,000 of insurance, how much does it cost him?

89.16

A lamp regularly priced at \$45 is part of an internet promotion of 15% off all lamps. What is the price of the lamp during the promotion?

38.25

John is saving \$80 each month for a vacation that costs \$720. If he has already saved \$480, how many more months will it take him to save the whole amount?

3

A car odometer reads 8,867.3 miles. How many more ,miles will it take to reach 10,000?

1132.70

The Maryon's borrow \$5000 for 3 years at 14% interest. What is the total amount they will pay back to the bank?

$2100 + 5000 = 7100$

Stephen pays \$33 per month for the insurance and pays \$5 for each visit to the doctor. He went to the clinic six times in two months. How much did he pay for insurance and treatment for the two months?

96

The city park is planning to fence the driving range. The dimensions are 310 yd by 120 yd. How many yards of fencing will it take to enclose the driving range?

860

In the same driving range, they need to buy grass seed to cover the ground. If one bag does 75 square yards, how many bags will the city need to buy for seed on the range?

496

A comedy club had the following ticket sales: 184,176,202,178,and 190. What was the average number of tickets sold?

186

Greg uses 5 gallons of fertilizer on his lawn. How many pints of fertilizer does he use?

40

A rectangular box measures 5 yards long, 4 yards wide, and 2 yards high. What is the volume of the box in cubic FEET?

120

Crystal can pick 14.5 baskets of strawberries per hour. At this rate, how many baskets can she pick in  $5\frac{1}{2}$  hours?

79.75



What is the cost of 5 pounds of tomatoes at 79 cents per pound?

3.95

A leather jackets costs \$145.37. A second one costs \$128.58. What is the difference in their prices?

16.79

825 people paid \$4.75 each for tickets to a football game. 489 people bought \$6.25 tickets. How much money was paid for tickets in all?

6975

Amy decided to do some fall cleaning. She figured it would take her 2 hours 15 minutes to scrub the floors, 25 minutes to dust and polish, 45 minutes to vacuum, 1 hour 45 minutes to clean the windows, and 1 hour 30 minutes to wash and rehang her curtains. How much time will her spring cleaning require?

6 hr 40 min

20% of the student's in Mr. Michael's Math class failed his final exam. Two-thirds of those who failed were girls. If a total of 120 students took the exam, how many girls failed?

16

Mrs. Maryon bought 8 dozen apples for her children's snacks. Mrs. Maryon has 4 children and each receives an apple a day. How many days will her supply of apples last?

24

What number is .459 less than 3.30?

2.841

Two sides of a rectangular park are 50 meters and 120 meters long. A path runs diagonally from one corner of the park to the opposite corner. The length of the path must be.....

130

Kim bought a dinette set that listed for \$575. She paid only \$310 for it. What percent of the list price did Kim save?

46%

Two trains leave the same station at the same time and travel in opposite directions, one averaging 45 mph and the other 60 mph. In how long will the trains be 630 mph apart?6 h

## Whole numbers review

In the numeral 4,682,159,370, the number 8 is in the \_\_\_\_\_ten millions\_\_\_\_\_place and 1 is in the \_\_\_\_\_hundred thousands\_\_\_\_\_place.

<div>4718+65+1835+427</div> <div>7045</div>	<div>4684-2998</div> <div>1686</div>	<div>6007-3978</div> <div>2029</div>
<div>534x6</div> <div>3204</div>	<div>85x47</div> <div>3995</div>	<div>843x69</div> <div>58137</div>
<div>679x538</div> <div>365302</div>	<div>4765÷8</div> <div>595.625</div>	<div>8493÷37</div> <div>229.54</div>

Fractional review. Reduce to the lowest terms.

$\frac{3}{5} + \frac{4}{5}$ $1 \frac{2}{5}$	$\frac{14}{15} - \frac{4}{15}$ $\frac{2}{3}$	$\frac{2}{3} + \frac{3}{8}$ $1 \frac{1}{24}$	$\frac{3}{4} + \frac{5}{12}$ $1 \frac{1}{6}$
$\frac{7}{8} \times \frac{4}{21}$ $\frac{1}{6}$	$\frac{4}{15} \div \frac{2}{5}$ $\frac{2}{3}$	$\frac{56}{81} \times \frac{54}{42}$ $2 \frac{2}{3}$	$\frac{6}{13} \div \frac{9}{26}$ $1 \frac{1}{3}$
$\frac{6}{7} = \frac{36}{42}$	$\frac{5}{9} = \frac{25}{45}$	$\frac{15}{20} = \frac{3}{4}$	$\frac{3}{4} = \frac{75}{100}$
$6 \frac{1}{4} + 5 \frac{3}{8}$ $11 \frac{5}{8}$	$7 \frac{2}{3} - 3 \frac{1}{4}$ $4 \frac{5}{12}$	$4 \frac{1}{2} \times 3 \frac{1}{3}$ $15$	$8 \frac{3}{4} \div 5 \frac{1}{2}$ $1 \frac{13}{22}$

# Decimal fractions review

Express each as a decimal fraction. If rounding is needed, round to the nearest hundredth.

$\frac{7}{100}=.07$	$\frac{183}{1000}=.183$	$\frac{2}{3}=.66$	$5\frac{3}{4}=5.75$
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Express as a common fraction in lowest terms or as a mixed number.

13.35=13 $\frac{35}{100}$ 13 $\frac{7}{20}$	.015=15/1000 $\frac{3}{200}$	12.324= 12 $\frac{324}{1000}$ 12 $\frac{81}{250}$
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Solve the following:

9.5+1.27+72.6 83.37	61.27-45.88 15.39	.81x75 60.75	36.24÷.08 453
84+2.13+.075 86.205	15.8-2.674 13.126	.067x4.11 .27537	76.39÷.0008 95487.50

9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x2</u> 18
7 <u>x6</u> 42	1 <u>x8</u> 8	9 <u>x6</u> 54	4 <u>x4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

# Algebra review

Solve for x or y

$X+7=23$ 16	$y+7+3y=-9$ -4	$15-x=18$ -3	$X=36\% \text{ of } 25$ 9
$X^2+2x+1=0$ $(x+1)(x+1)$	$X^2-36=0$ $(x-6)(x+6)$	$\frac{y}{4}=\frac{7}{14}$ 2	$Y+11=39$ 28
$21-y=41$ -20	$y-14=3y+18$ -16	45% of 81=x 36.45	$\frac{x}{5}=\frac{3}{135}$ 9

Integers and algebraic expressions

Remember if you have a subtraction, you change the sign and the sign right after the subtraction sign and then add.

$$(+7) + (+5) = 12$$

$$(-1) - (+5) = -6$$

$$(-6) + (-5) = -11$$

$$(-12) - (-60) = 48$$

$$(+824) + (-155) = 669$$

$$(-1482) + (-59) = -1541$$

$$(+7) + (-5) + (-4) + (+9) = 7$$

$$(-12) + (-38) + (+75) - (+52) = -27$$

Multiplying/division rule

Signs same, answer is positive

Signs different, answer is negative

REMEMBER PEMDAS

$$(-2)(+3) =$$

$$(-6)(-1)(+2) = 12$$

$$-6$$

$$(+6)(-5) = -30$$

$$(+15) \div (-3) = -5$$

$$(-4) \div (-1) = 4$$

$$(-64) \div (+4) = -16$$

$$(-25) - 4 \times 3^2 = -61$$

$$(2)(-7) - (3)(-4) = -2$$



Write the following numbers:

Four thousand twenty	4020
Three thousand, eight hundred	3800
Fifty thousand	50000
Nine million	9000000
Seven million, six thousand	7,006,000
Fifty-four thousand	54000
Two hundred five thousand, eighty	250080
Four million, four hundred	4000400
Seven million, six	7000006

Write the name of each numeral

240,000	Two hundred forty thousand
6,072,000	Six million, seventy-two thousand
41,000,000,062	Forty-one billion, sixty-two
725,000,000,000	Seven hundred twenty-five billion

Practice addition

345 <u>278</u> 623	679 <u>196</u> 875	247 85 <u>406</u> 738	89 64 53 86 <u>58</u> 350
437 95 43 94 <u>536</u> 1205	435 <u>268</u> 703	618 278 <u>54</u> 950	458 9 <u>879</u> 1346
807 52 47 <u>633</u> 1539	4315 914 85 579 <u>6802</u> 12695	200 300 100 <u>400</u> 1000	2 8 9 2 <u>1</u> 22

Practice subtraction

$\begin{array}{r} 85 \\ \underline{58} \\ 27 \end{array}$	$\begin{array}{r} 72 \\ \underline{27} \\ 45 \end{array}$	$\begin{array}{r} 561 \\ \underline{285} \\ 276 \end{array}$	$\begin{array}{r} 612 \\ \underline{437} \\ 175 \end{array}$
$\begin{array}{r} 736 \\ \underline{359} \\ 377 \end{array}$	$\begin{array}{r} 6300 \\ \underline{3842} \\ 2458 \end{array}$	$\begin{array}{r} 810 \\ \underline{346} \\ 464 \end{array}$	$\begin{array}{r} 5030 \\ \underline{2506} \\ 2524 \end{array}$
$\begin{array}{r} 4000 \\ \underline{1087} \\ 2913 \end{array}$	$\begin{array}{r} 2000 \\ \underline{1875} \\ 125 \end{array}$	$\begin{array}{r} 275 \\ \underline{124} \\ 151 \end{array}$	$\begin{array}{r} 5874 \\ \underline{1249} \\ 4625 \end{array}$

Practice multiplication

$\begin{array}{r} 82 \\ \underline{16} \\ 1312 \end{array}$	$\begin{array}{r} 65 \\ \underline{55} \\ 3575 \end{array}$	$\begin{array}{r} 22 \\ \underline{12} \\ 264 \end{array}$	$\begin{array}{r} 88 \\ \underline{14} \\ 1232 \end{array}$
$\begin{array}{r} 925 \\ \underline{297} \\ 274725 \end{array}$	$\begin{array}{r} 540 \\ \underline{343} \\ 185220 \end{array}$	$\begin{array}{r} 836 \\ \underline{742} \\ 620312 \end{array}$	$\begin{array}{r} 725 \\ \underline{687} \\ 498075 \end{array}$
$\begin{array}{r} 892 \\ \underline{12} \\ 10704 \end{array}$	$\begin{array}{r} 455 \\ \underline{5} \\ 2275 \end{array}$	$\begin{array}{r} 125 \\ \underline{5} \\ 625 \end{array}$	$\begin{array}{r} 154 \\ \underline{55} \\ 8470 \end{array}$

Practice division

$15 \div 2$ $7.5$	$39 \div 6$ $6.5$	$54 \div 8$ $6.75$	$17 \div 8$ $2.125$
$842 \div 5$ $168.4$	$948 \div 3$ $316$	$742 \div 4$ $185.5$	$638 \div 7$ $91.14$
$586 \div 34$ $17.24$	$470 \div 63$ $7.46$	$389 \div 53$ $7.34$	$653 \div 92$ $7.10$
$5692 \div 53$ $107.40$	$81349 \div 27$ $3012.93$	$68341 \div 19$ $3596.89$	$784136 \div 418$ $1875.92$

## Decimals

Adding	$5.3+16.8+.792$ $22.892$	$5.94+6.38+47.3+.29$ $59.91$	$17.2+126+.28+.953+15+.04$ $159.473$
Subtracting	$38.4-16.2$ $22.2$	$1.732-.9$ $0.832$	$75.81-.3756$ $75.4344$
Multiplying	$43.8 \times 2.4$ $105.12$	$.006 \times .0071$ $0.0000426$	$55 \times 2.7$ $148.5$
Dividing	$34.02 \div .17$ $200.12$	$97 \div 3.8$ $25.53$	$8.16 \div .52$ $15.70$

Express each decimal as a percent

Decimal	Percent	Decimal	Percent
.64	64%	.45	45%
.44	44%	.5	50%
.4	40%	.36	36%
.28	28%	.33	33%
.56	56%	.1	10%

Finding a percent of a number

20% of 737	147.4
33% of 454	149.82
85% of 567	481.95
95% of 659	626.05
15% of 375	56.25
90% of 261	234.90
100% of 441	441
100% of 2	2
8% of 814	65.12
10% of 939	93.9
61% of 228	139.08

Express each fraction as a percent

Fraction	Percent	Fraction	Percent
$\frac{10}{16}$	62.5%	$\frac{9}{17}$	52.94%
$\frac{9}{13}$	69.23%	$\frac{2}{22}$	9.09%
$\frac{5}{23}$	21.74%	$\frac{1}{4}$	25%
$\frac{1}{3}$	33.33%	$\frac{2}{5}$	40%
$\frac{7}{8}$	87.5%	$\frac{3}{5}$	60%
$\frac{4}{5}$	80%	$\frac{2}{3}$	66.66%
$\frac{1}{2}$	50%	$\frac{5}{6}$	83.33%

If a grocery bill totaling \$15.75 is paid with a twenty dollar bill, how much change should be returned?

4.25

How much is 75% of \$9.89?

7.42

Jentzen took his dog for 3 long walks on Sunday. First they walked 1 mile, then they walked 720 yards, and for the last walk they walked 3,500 feet. How many feet did they walk?

10940

Kim wants to cover a small chest with contact paper. The chest is 24 x 12 x 10 inches. How much contact paper is needed? Draw this out to help solve.

1296 sq in

Amy bought a sofa priced at \$995 and a chair priced at \$149. The sales tax is 8 %. How much must she pay for the sofa, the chair, and the tax?

1235.52

Simplify  $38 + (-17) + 91 + (-58)$

54

Ken won at tennis 4 out of 6 matches. What percentage did he win?

.666

Evan was looking for the smallest wrench in his tool box. If he has 5 wrenches, and the sizes are  $\frac{1}{2}$  inch,  $\frac{3}{8}$  inch,  $\frac{7}{8}$  inch,  $\frac{3}{4}$  inch and  $\frac{9}{16}$  inch, then which is the smallest?

$\frac{3}{8}$

Kyle runs track. Last week he ran 8 miles on Monday, 3 miles on Tuesday, 9 miles on Wednesday, 5 miles on Thursday, and 10 miles on Friday. Find the mean.

7



9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x2</u> 18
7 <u>x6</u> 42	1 <u>x8</u> 8	9 <u>x6</u> 54	4 <u>x4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

Find the sum :  $-32+(-18)$

- a) -14
- b) 14
- c) -50
- d) 50

The cost of three tickets at \$3 each and two tickets at \$9.50 each is ?

- a) \$28
- b) \$38
- c) \$12.50
- d) \$34.50

Solve  $16 = \frac{t}{4} + 4$

- a)  $t=80$
- b)  $t=192$
- c)  $t=60$
- d)  $t=48$

Which number is to the left of -6 on a number line?

- a) -8
- b) 0
- c)  $|-6|$
- d) 7

Solve  $-13n=52$

- a)  $n=-4$
- b)  $n=-676$
- c)  $n=4$
- d)  $n=676$

How would you move the decimal point to change 47.5mm to m?

- a) 2 places to the right
- b) 2 places to the left
- c) 3 places to the right
- d) 3 places to the left

Evaluate  $(2b)^3$  when  $b=4$

- a) 512
- b) 32
- c) 128
- d) 216

Find the sum  $-12+(-18)$

- a) -6
- b) -30
- c) 6
- d) 30

A rectangle has a perimeter of 28cm and width of 3cm. Use the formula  $P=2l+2w$  to find the length of the rectangle.

- a) 25cm
- b) 17cm
- c) 22cm
- d) 11cm

Solve  $15-4y=3$

- a)  $y=3$
- b)  $y=4.5$
- c)  $y=-3$
- d)  $y=-4.5$

The length of a book is about 230 mm. About how many centimeters long is the book?

- a) 0.23
- b) 2300
- c) 2.3
- d) 23

A pictograph shows that 900 people bought tapes and 600 people bought CDs. If 6 symbols represent the people who bought tapes, how many people does one symbol represent?

- a) 250
- b) 100
- c) 150
- d) 300

Which figure has no lines of symmetry?

- a) regular octagon
- b) square
- c) scalene triangle
- d) rhombus
- e) none of the above

Evaluate the difference  $a - b$  when  $a = 51.2$  and  $b = 3.43$

- a) 1.69
- b) 54.63
- c) 47.77
- d) 8.55

Find the measure of an angle that is supplementary to an angle with a measure of 83 degrees.

- a) 97
- b) 277
- c) 7
- d) 263

Solve  $-4n+8=32$

- a)  $n=-10$
- b)  $n=-6$
- c)  $n=6$
- d)  $n=10$

Write  $5/12$  as a decimal.

- a) 0.416
- b)  $0.4\overline{16}$
- c)  $0.4\overline{16}$
- d)  $0.4\overline{16}$

Simplify  $\frac{x^9}{x^3}$

- a)  $x^3$
- b)  $x^6$
- c)  $x^{12}$
- d)  $x^{-6}$

At noon, the temperature was  $-9$  degrees C. During the next 5 hours, it fell 4 degrees. What was the temperature at 5:00pm?

- a) 5 degree C
- b) -5 degree C
- c) 13 degree C
- d) -13 degree C

Choose the fraction that is not equivalent to  $\frac{3}{4}$

- a)  $39/52$
- b)  $75/100$
- c)  $21/28$
- d)  $69/96$

Simplify  $8a^6 \cdot 5a^2$

- a)  $3a^4$
- b)  $13a^8$
- c)  $40a^{12}$
- d)  $40a^8$

What is the prime factorization of 80?

- a)  $8 \cdot 10$
- b)  $2^4 \cdot 5$
- c)  $2 \cdot 5 \cdot 8$
- d)  $5 \cdot 16$

Decide which is the appropriate form of the answer. Vans hold 12 students each. If 5 students plan to travel in vans, how many vans will be needed?

- a) decimals
- b) dollars
- c) fraction
- d) whole number

Simplify  $s^{-6}$

- a)  $-6s$
- b)  $s-6$
- c)  $\frac{s}{6}$
- d)  $\frac{1}{s^6}$

Solve  $9x + 2 + 4x = 41$

- a)  $x=3$
- b)  $x=2$
- c)  $x=507$
- d)  $x=3\frac{4}{13}$

Write 0.0000498 in scientific notation.

- a)  $4.98 \times 10^{-4}$
- b)  $4.98 \times 10^4$
- c)  $4.98 \times 10^5$
- d)  $4.98 \times 10^{-5}$

On a trip, Evan plans to spend 10 days camping, and then 11 days at a resort.  
How many weeks long is his trip?

- a) 21
- b) 7
- c) 2
- d) 3

An angle that measures 79 degrees is a(n) \_\_\_\_\_ angle.

- a) obtuse
- b) right
- c) acute
- d) adjacent

Five rulers cost \$1.95. What is the cost of 12 rulers?

- a) 4.68
- b) 9.75
- c) 23.40
- d) 3.90

What is 45% of 120?

- a) 45
- b) 2.6
- c) 54
- d) 0.45

The radius of a circle is 10 in. What is the area of the circle?

- a)  $31.4\text{in}^2$
- b)  $100\text{in}^2$
- c)  $62.8\text{in}^2$
- d)  $314\text{in}^2$

The lengths of the legs of a right triangle are 0.3cm and 0.4cm. What is the length of the hypotenuse?

- a) 0.84 cm
- b) 0.5 cm
- c) 0.25 cm
- d) 0.7 cm

Solve  $\frac{x}{7} = -21$

- a)  $x=3$
- b)  $x= -3$
- c)  $x= -147$
- d)  $x= 147$

Write in decimal notation  $6.35 \times 10^5$

- a)  $63.5 \times 10^4$
- b) 635,000
- c) .0000635
- d) 63.5

The scale of a statue of a famous citizen is 5 inch:3 ft. The actual person is 6ft tall. Find the height of the statue.

- a) 6 inch
- b) 2.5 inch
- c) 10 inch
- d) 3.6 inch



Jadyn plans to put a wallpaper border around her rectangular bedroom. Which measurement of the room should she find?

- a) area
- b) diameter
- c) circumference
- d) perimeter

Simplify  $12+4(3-5)^2$

- a) 64
- b) -1
- c) 28
- d) -64

Simplify  $\frac{15n^2}{n^6}$

- a)  $15n^8$
- b)  $15n^4$
- c)  $\frac{15}{n^3}$
- d)  $\frac{15}{n^4}$

Simplify  $-5(-4)+6(-2)$

- a) 8
- b) -32
- c) 20
- d) -52

The length of one side of a regular octagon is 15cm. Find the perimeter.

- a) 90 cm
- b) 120 cm
- c) 23 cm
- d) cannot be determined

The measure of an angle is 73 degrees. What is the measure of its complement?

- a) 17 degrees
- b) 107 degrees
- c) 27 degrees
- d) 117 degrees

There are 3 teachers for every 50 students in a school. the school has 750 students How many teachers are there at the school?

- a) 125
- b) 703
- c) 50
- d) 45

Solve:  $r - 13 = -2$

- a)  $r = 15$
- b)  $r = 11$
- c)  $r = -15$
- d)  $r = -11$

Identify the figure



- a) cone
- b) sphere
- c) cylinder
- d) pyramid

Divide  $\frac{3x^4 + 12x^2 - 6x}{3x}$

- a)  $x^4 + 4x^2 - 2x$
- b)  $x^3 + 4x - 2$
- c)  $x^3 + 12x^2 - 6x$
- d)  $9x^5 + 36x^3 - 18x^2$

9 <u>x1</u> 9	2 <u>x2</u> 4	5 <u>x1</u> 5	4 <u>x3</u> 12	0 <u>x0</u> 0	9 <u>x9</u> 81	3 <u>x5</u> 15	8 <u>x5</u> 40	2 <u>x6</u> 12	4 <u>x7</u> 28
5 <u>x6</u> 30	7 <u>x5</u> 35	3 <u>x0</u> 0	8 <u>x8</u> 64	1 <u>x3</u> 3	3 <u>x4</u> 12	5 <u>x9</u> 45	0 <u>x2</u> 0	7 <u>x3</u> 21	4 <u>x1</u> 4
2 <u>x3</u> 6	8 <u>x6</u> 48	0 <u>x5</u> 0	6 <u>x1</u> 6	3 <u>x8</u> 24	1 <u>x1</u> 1	9 <u>x0</u> 0	2 <u>x8</u> 16	6 <u>x4</u> 24	0 <u>x7</u> 0
7 <u>x7</u> 49	1 <u>x4</u> 4	6 <u>x2</u> 12	4 <u>x5</u> 20	2 <u>x4</u> 8	4 <u>x9</u> 36	7 <u>x0</u> 0	1 <u>x2</u> 2	8 <u>x4</u> 32	6 <u>x5</u> 30
3 <u>x2</u> 6	4 <u>x6</u> 24	1 <u>x9</u> 9	5 <u>x7</u> 35	8 <u>x2</u> 16	0 <u>x8</u> 0	4 <u>x2</u> 8	9 <u>x8</u> 72	3 <u>x6</u> 18	5 <u>x5</u> 25
8 <u>x9</u> 72	3 <u>x7</u> 21	9 <u>x7</u> 63	1 <u>x7</u> 7	6 <u>x0</u> 0	0 <u>x3</u> 0	7 <u>x2</u> 14	1 <u>x5</u> 5	7 <u>x8</u> 56	4 <u>x0</u> 0
8 <u>x3</u> 24	5 <u>x2</u> 10	0 <u>x4</u> 0	9 <u>x5</u> 45	6 <u>x7</u> 42	2 <u>x7</u> 14	6 <u>x3</u> 18	5 <u>x4</u> 20	1 <u>x0</u> 0	9 <u>x2</u> 18
7 <u>x6</u> 42	1 <u>x8</u> 8	9 <u>x6</u> 54	4 <u>x4</u> 16	5 <u>x3</u> 15	8 <u>x1</u> 8	3 <u>x3</u> 9	4 <u>x8</u> 32	9 <u>x3</u> 27	2 <u>x0</u> 0
8 <u>x0</u> 0	3 <u>x1</u> 3	6 <u>x8</u> 48	0 <u>x9</u> 0	8 <u>x7</u> 56	2 <u>x9</u> 18	9 <u>x4</u> 36	0 <u>x1</u> 0	7 <u>x4</u> 28	5 <u>x8</u> 40
0 <u>x6</u> 0	7 <u>x1</u> 7	2 <u>x5</u> 10	6 <u>x9</u> 54	3 <u>x9</u> 27	1 <u>x6</u> 6	5 <u>x0</u> 0	6 <u>x6</u> 36	2 <u>x1</u> 2	7 <u>x9</u> 63

Out of a 52 card deck, what is the probability of drawing one of the four kings?

$\frac{4}{52}$

Multiply 10  $(-3w+2)$

$-30w+20$

There are 650 seniors at Sunnydale High School. What percentage of the seniors are girls if 351 of the seniors are boys?

46%

Joe has seven marbles in his pocket. Two are red, four are blue, and one is white. What is the probability that he will NOT pull out a red marble if he picks one at random?

$\frac{5}{7}$

Which expression is equivalent to  $t^2 - 36$ ?

- a)  $(t-6)(t-6)$
- b)  $(t+6)(t-6)$
- c)  $(t-12)(t-3)$
- d)  $(t-12)(t+3)$

A school purchases boxes of candy bars: each box contains 50 candy bars and each box costs \$30.

How much does the school have to charge for each candy bar to make a profit of \$10 per box?

- a) 40 cents
- b) 50 cents
- c) 80 cents
- d) \$1.25

The math club sells candy bars and drinks during football games. They sell 150 candy bars for \$265. How much does each candy bar sell for?

.57

A cellphone company offers four choices for purchasing talk time. Which of the following has the lowest cost per minute?

- a) 200 minutes for \$24.50
- b) 550 minutes for \$68.00
- c) 700 minutes for \$80.25
- d) 850 minutes for \$99.50