AREA WORKSHEET

For each of the figures guess what percentage of the square is shaded. After you have made all your guesses use the plastic grid to get a better estimate.

guess__________
estimate__________

guess__________
estimate__________

guess__________
estimate__________

guess__________
estimate__________

guess__________
estimate__________

guess__________
estimate__________
ESTIMATION

Suppose you saw an ad that said "SALE 25% OFF ALL AUTOMOBILES". About how much would you save on a used car which normally costs $3999.99?

You might say:

I. 25% means
   $25 for every $100 or
   $250 for every $1000 or
   $1000 for every $4000.

or II. 1% of $4000 is $40 so
   25% of $4000 is $25 \times $40 = $1000.

or III. 25% is 1/4 so
   1/4 of $4000 is $1000.

Method I can be used to estimate 14% of $510:
   $14 for every $100 so $70 for every $500,
   So we have a little more than $70 for $510.

Method II works very well for small percentages. To find 6% of $230 we say 1% of $230 is $2.30 so 6% is 6 \times $2.30 = $13.80.

Method III works well for percentages that can be easily written as fractions such as 10% = 1/10, 20% = 1/5, 25% = 1/4 and 50% = 1/2.

Try any method you like to estimate the answer. After you have decided upon an answer discuss your answers and the methods that you used with the other members of your group.

1. The bill for dinner for two at a nice restaurant totalled $84.73 and you plan to leave a 15% tip. Estimate the amount of the tip. (The nearest $0.25 is close enough.)

2. Sales tax in the state of Wyoming is 4%. Estimate the amount of sales tax on a buffalo steak that costs $12.95.

3. The Bookstore at MPC is having a 20% off sale on all items. How much would you save on the following items?

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COST</th>
<th>APPROX SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculator</td>
<td>$75.00</td>
<td></td>
</tr>
<tr>
<td>Backpack</td>
<td>$32.97</td>
<td></td>
</tr>
</tbody>
</table>
4. Ms. Noether, your mathematics teacher, said that she will award a grade of A to all quizzes with 90% or more correct. Joe Student made the following scores on his quizzes. On which ones did he receive an A?

<table>
<thead>
<tr>
<th>Score</th>
<th>Did he get an A?</th>
</tr>
</thead>
<tbody>
<tr>
<td>87 out of 100</td>
<td></td>
</tr>
<tr>
<td>47 out of 50</td>
<td></td>
</tr>
<tr>
<td>22 out of 25</td>
<td></td>
</tr>
<tr>
<td>9 out of 10</td>
<td></td>
</tr>
<tr>
<td>18 out of 20</td>
<td></td>
</tr>
<tr>
<td>4 out of 5</td>
<td></td>
</tr>
</tbody>
</table>

5. About what percent of the time would you expect to spin:

   - an A?
   - a B?
   - a C?
   - a D?

Suppose you spun the spinner 100 times, about how many A’s, B’s, C’s and D’s would you expect?

If you spun it 30 times what would you expect?
FIRST MAKE A GUESS
THEN DISCUSS YOUR GUESS WITH YOUR GROUP
FINALLY USE A CALCULATOR OR PENCIL AND PAPER TO CHECK YOUR GUESS.

1. You want to buy a stereo which is marked 20% off. There is a 6% sales tax. Would it be better to take the discount before or after the tax is added?
Try calculating both ways if the original price was
a) $100
b) $500
c) $1000

2. You work at El Ritz department store where you get a 10% discount on all items that you purchase (even if they are on sale). A television goes on sale for 30% off the regular price.
Would it be better to take your 10% discount before or after the sale discount of 30%?

Is the total discount of 40% or is it some other value?

Check your guess if the original price was $1000.
3. Jack and Jill are "playing" at the breakfast table. Jack has a glass with 100ml of orange juice and Jill has a glass with 100ml of carrot juice. Jack takes 10ml of his orange juice and adds it to Jill’s 100ml of carrot juice. Jill the retaliates by taking 10ml of this mixture and adds it to Jack’s orange juice.

Does Jack have more carrot juice in his orange juice or does Jill have more orange juice in her carrot juice?

What percent of Jack’s juice is carrot juice?

What percent of Jill’s juice is orange juice?

You may find that the Base Ten Blocks are useful.

4. One hundred pounds of celery which is 99% water is dehydrated until it is only 98% water.

How much does the dehydrated celery weigh?

Since the amount of non-water does not change, it is always 1 lb. Guess either the amount of water or the total weight then calculate the other amount and then the percent water.

<table>
<thead>
<tr>
<th>NON-WATER</th>
<th>WATER</th>
<th>TOTAL WEIGHT</th>
<th>PERCENT WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 lb</td>
<td>99 lbs</td>
<td>100 lbs</td>
<td>99/100 *100%  = 99%</td>
</tr>
<tr>
<td>1 lb</td>
<td>98 lbs</td>
<td>99 lbs</td>
<td>98/99 *100%  = 98.99%</td>
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<tr>
<td>1 lb</td>
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<td>1 lb</td>
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<td>1 lb</td>
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