

## Pre-Algebra Worksheet 6: Solutions

### 1 Problems

- 0.7
  - 0.22
  - 500.05472
- $2.34 < 2.73 < 3.18$
  - We round the numbers to 2.5, 3.2 and 2.7. Adding them gives

$$\begin{array}{r} 2.3 \\ +3.2 \\ +2.7 \\ \hline 8.2 \\ \hline \end{array}$$

So the estimated cost of the items is \$8.20. Yes, she has enough to buy them.

- Adding the exact numbers gives

$$\begin{array}{r} 2.34 \\ +3.18 \\ +2.73 \\ \hline 8.45 \\ \hline \end{array}$$

So the total cost of the items is \$8.45. We see that in this case rounding the numbers to 1 decimal place gave us almost the correct answer. This shows how useful rounding decimals to make estimates can be.

- We need to subtract the cost of the items above from \$10:

$$\begin{array}{r} 10.00 \\ -8.45 \\ \hline 1.55 \\ \hline \end{array}$$

So she will receive \$1.55.

- (e) The cost before tax was \$7.50. The cost after tax was 8.45. So the part of the cost due to tax is  $8.40 - 7.50$ :

$$\begin{array}{r} 8.45 \\ -7.50 \\ \hline 0.95 \\ \hline \end{array}$$

So 0.95 is  $x\%$  of 7.5. We write this as  $7.5x = 0.9$ . So

$$\begin{aligned} 7.5x &= 0.95 \\ x &= \frac{0.95}{7.5} \\ &= \frac{95}{75} \\ &= 0.12 \end{aligned}$$

So the tax is  $0.12 = 12\%$ .

3. Ross is planning a trip where he will drive a distance of 116.38 miles. His car averages 20.3 miles per gallon.

- (a) He needs to travel a distance  $d = 116.38$  miles. Let  $m = 20.3$  miles per gallon. So we need to divide the distance  $d$  by the number of miles per gallon  $m$  to get the number of gallons  $x$  he needs for the journey. So we want to calculate

$$\begin{aligned} x &= \frac{d}{m} \\ &= \frac{116.38}{20.3} \end{aligned}$$

(1)

Multiply top and bottom by 10:

$$\begin{array}{r} 5.73 \\ 203 \overline{)1163.8} \\ \underline{\phantom{203}1163} \\ -1015 \\ \underline{\phantom{203}148.8} \\ -142.1 \\ \underline{\phantom{203}6.70} \\ -6.09 \\ \underline{\phantom{203}0.61} \end{array}$$

(2)

Round the answer up (he doesn't want to fall short!)

So Ross needs to buy 5.8 gallons.

- (b) We have just calculated that Ross needs to buy 5.8 gallons. Each gallon costs \$1.67. So we need to multiply 5.8 by 1.67.

1. *Multiply normally, ignoring the decimal points.*

$$58 \times 167 = 9636$$

2. *Then put the decimal point in the answer - it will have as many decimal places as the two original numbers combined.*

5.8 has 1 decimal place and 1.67 has 2 decimal places. So the result must have 3 decimal places. Hence  $5.8 \times 1.67 = 9.686$ .

Because we are dealing with money, we need to round the result off to 2 decimal places.

So we look at the 3rd decimal place. 6 is greater than 5 so the rounded number 9.69.

So Ross will have to pay \$9.69.

4. Let  $w$  be the percent of the rug that was wasted. So  $w$  is 1 square meter out of 200 square meter. We know that we can then write

$$\begin{aligned} w &= \frac{1}{200} \\ &= 0.005 \end{aligned}$$

So we need to write the decimal 0.005 as a percent by multiplying by 100. Use the rules again:

1. *Multiply normally, ignoring the decimal points.*

$$5 \times 100 = 500$$

2. *Then put the decimal point in the answer - it will have as many decimal places as the two original numbers combined.*

0.005 has 3 decimal places and 100 has 0 decimal places. So the result must have 3 decimal places. Hence  $w = 0.5\%$ .

5. Let  $g$  be the group's earnings. Remembering that "of" means multiply, we can write  $12\%g = 36,000$ . Percent means out of 100. So  $12\% = \frac{12}{100}$ . So

$$\begin{aligned}\frac{12}{100}g &= 36000 \\ \frac{100}{12} \frac{12}{100}g &= 36000 \times \frac{100}{12} \\ g &= 3,000 \times 100 \\ g &= 300,000\end{aligned}$$

So the group must \$300,000 in order for the agent to earn \$36,000.