

# Warm Up Grade 7



Multiply

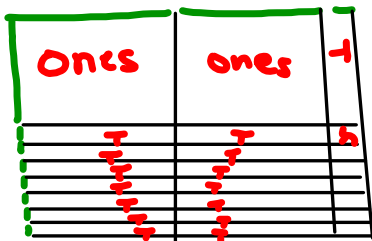
1) 
$$\begin{array}{r} 3.25 \\ \times 1.8 \\ \hline 2600 \\ + 3250 \\ \hline 5850 \end{array}$$

← 2 # after.  
← 1 # after.  
← 3 # after decimal

2) 
$$\begin{array}{r} 16.2 \\ \times 3.7 \\ \hline 1134 \\ + 4860 \\ \hline 59.94 \end{array}$$

model  $2.1 \times 1.7$

↓ ↓  
2 long 1 short



2 ones      2.00  
15 tenths    1.50  
7 hundredths 0.07

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3.57

Quiz time

4. Multiply. Use a rectangle model.

a)  $4.2 \times 3.7$

$$\begin{array}{r} 4.2 \\ \times 3.7 \\ \hline 294 \\ 1260 \\ \hline 15.54 \end{array}$$

$\approx 4 \times 4 = 16$

b)  $8.9 \times 0.3$

$$\begin{array}{r} 8.9 \\ \times 0.3 \\ \hline 267 \end{array}$$

$\approx \frac{9}{3} = 3$

c)  $0.6 \times 0.9$

$$\begin{array}{r} 0.6 \\ \times 0.9 \\ \hline 0.54 \end{array}$$

< 1

5. A rectangular plot of land measures 30.5 m by 5.3 m.

What is the area of the plot?

Estimate to check your answer is reasonable.

$$A = l \times w$$

$$30.5 \times 5.3$$

$$\approx 30 \times 5 = 150$$

$$\begin{array}{r} 30.5 \\ \times 5.3 \\ \hline 915 \\ 15250 \\ \hline 161.65 \text{ m}^2 \end{array}$$

## Homework Solutions

5. A rectangular plot of land measures 30.5 m by 5.3 m.

What is the area of the plot?

Estimate to check your answer is reasonable.

$$A = l \times w$$

$$30.5 \times 5.3$$

$$\approx 30 \times 5$$

$$150$$

$$\begin{array}{r} 30.5 \\ \times 5.3 \\ \hline 915 \\ 15250 \\ \hline 161.65 \text{ m}^2 \end{array}$$

- 6) Multiply. Describe the pattern

$$a) 8.36 \times 10 = 83.6$$

$$8.36 \times 100 = 836$$

$$8.36 \times 1000 = 8360$$

$$8.36 \times 10\,000 = 83\,600$$

When you multiply by multiples of 10 (10, 100, 1000..), the digit in the product moves one place to the left each time. (Or, the decimal point moves one place to the right each time.)

$$a) 8.36 \times 0.1 = 0.836$$

$$8.36 \times 0.01 = 0.0836$$

$$8.36 \times 0.001 = 0.00836$$

$$8.36 \times 0.0001 = 0.000836$$

When you multiply by multiples of 0.1 (0.1, 0.01, 0.001..), the digit in the product moves one place to the right each time. (Or, the decimal point moves one place to the left each time.)

## Homework Solutions

7) Area = length x width  
= 3.4m x 2.7m  
= 9.18 m<sup>2</sup>

$$\begin{array}{r} 3.4 \\ \times 2.7 \\ \hline 238 \\ 680 \\ \hline 9.18 \end{array}$$

8) a)  $2.7 \times 4.786 = 12.9222$

b)  $12.52 \times 13.923 = 174.31596$

c)  $0.986 \times 1.352 = 1.333072$

Homework Solutions

9. The fuel consumption estimates of Josie's car are:

City: 21.2 km/L Highway: 23.3 km/L

The car's gas tank holds 40.2 L of fuel.

a) How far could Josie drive on a full tank of gas on the highway before she runs out of fuel?

b) How far could she drive on a full tank of gas in the city?

What assumptions did you make?

$$\begin{array}{r} 23.3 \\ \times 40.2 \\ \hline 466 \\ 93200 \\ \hline 936.66 \end{array}$$

she can drive 936.66 km on a full tank.

$$\begin{array}{r} 21.2 \\ \times 40.2 \\ \hline 424 \\ 84800 \\ \hline 852.24 \end{array}$$

In the city she can drive 852.24 km

10. Find the cost of each item at the Farmers' Market.

Which strategy will you use? Justify your choice.

a) 2.56 kg of apples at \$0.95/kg

b) 10.5 kg of potatoes at \$1.19/kg

c) 0.25 kg of herbs at \$2.48/kg

$$\begin{array}{r} 2.56 \\ \times 0.95 \\ \hline 1280 \\ 23040 \\ \hline 2.4320 \end{array}$$

≈ \$2.50

Apples \$2.43

$$\begin{array}{r} 10.5 \\ \times 1.19 \\ \hline 945 \\ 10500 \\ 105000 \\ \hline 12.495 \end{array} \text{ or } \$12.50$$

$$\begin{array}{r} 10 \times 1.19 = 11.90 \\ 0.5 \times 1.19 = 0.60 \\ \hline 12.50 \end{array}$$

$$\begin{array}{r} 2.48 \\ \times 0.25 \\ \hline 1240 \\ 4960 \\ \hline 0.6200 \end{array}$$

$$\begin{array}{r} \frac{1}{4} \text{ of } \$2 = 0.50 \\ \frac{1}{4} \text{ of } 48¢ = 0.12 \\ \hline \$0.62 \end{array}$$

11. The product of 2 decimals is 0.36.

What might the decimals be?

Find as many answers as you can.

### Homework Solutions

$$4 \times 9 = 36, \text{ so } 0.4 \times 0.9 = 0.36$$

$$2 \times 18 = 36, \text{ so } 0.2 \times 1.8 = 0.36$$

$$1 \times 36 = 36, \text{ so } 0.1 \times 3.6 = 0.36$$

$$3 \times 12 = 36, \text{ so } 0.3 \times 1.2 = 0.36$$

12. a) Multiply  $18 \times 12$ .

b) Use only the result from part a and estimation.

Find each product.

i)  $1.8 \times 12$

ii)  $18 \times 0.12$

iii)  $0.18 \times 12$

iv)  $0.18 \times 0.12$

Explain your strategies.

$$\begin{array}{r} 18 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \times 18 = 180 \\ 2 \times 18 = 36 \\ \hline 216 \end{array}$$

$$\begin{array}{l} \text{b) } 1.8 \times 12 = 21.6 \\ 18 \times 0.12 = 2.16 \\ 0.18 \times 12 = 2.16 \\ 0.18 \times 0.12 = 0.0216 \end{array}$$

13. Take It Further

a) Multiply.

i)  $6.3 \times 1.8$

ii)  $0.37 \times 0.26$

iii)  $3.52 \times 2.4$

iv)  $1.234 \times 0.9$

b) Look at the questions and products in part a.

What patterns do you see in the numbers of decimal places in the question and the product?

How could you use this pattern to place the decimal point in a product without estimating?

c) Multiply:  $2.6 \times 3.5$

Does the pattern from part b hold true?

If your answer is no, explain why not.

Homework Solutions

$$\begin{array}{r} 6.3 \\ \times 1.8 \\ \hline 504 \\ 630 \\ \hline 11.34 \end{array}$$

$\approx 6 \times 2$   
12

$$\begin{array}{r} 0.37 \\ \times 0.26 \\ \hline 222 \\ 740 \\ \hline .0962 \end{array}$$

$$\begin{array}{r} 3.52 \\ \times 2.4 \\ \hline 1408 \\ 7040 \\ \hline 8448 \end{array}$$

$\approx 3.5 \times 2$   
7

$$\begin{array}{r} 1.234 \\ \times 0.9 \\ \hline 1106 \end{array}$$

$\approx 1.234$



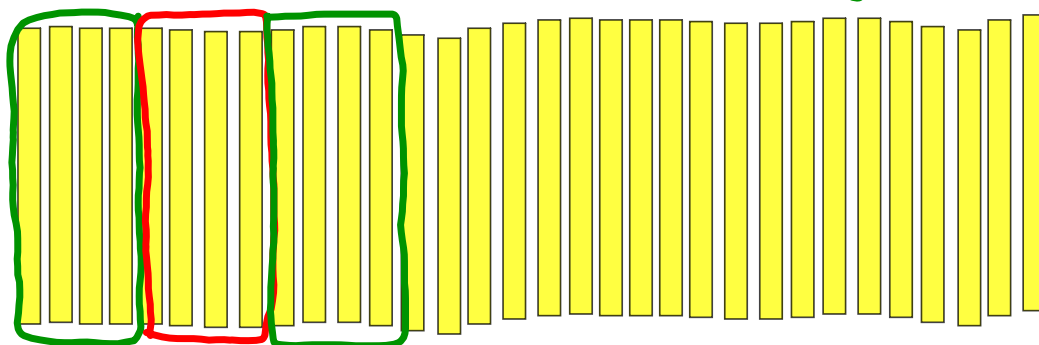
## Dividing Decimals

Since multiplication and division is related, we can also use Base Ten Blocks to divide.

$$3.2 \div 0.4$$

we say 32 tenths  $\div$  4 tenths = 8 groups (How many groups?)

break into groups  
containing 4 tenths.



## Dividing Decimals

$1.8 \times 0.4 = 0.72$  THEN  $0.72 \div 1.8 = 0.4$   
 $0.72 \div 0.4 = 1.8$

dividend
divisor
quotient

$$\begin{array}{r} \text{Quotient} \\ \text{Divisor} \overline{) \text{Dividend}} \end{array}$$

long division

long division but first make divisor a whole number

a)  $0.4 \overline{) 0.72}$  → 
$$\begin{array}{r} 1.8 \\ 4 \overline{) 7.2} \\ \underline{-4} \phantom{0} \\ 32 \\ \underline{32} \\ 0 \end{array}$$

b)  $0.8 \overline{) 0.72}$  → 
$$\begin{array}{r} .9 \\ 8 \overline{) 7.2} \\ \underline{72} \\ 0 \end{array}$$

$$52.1 \div 0.9$$

estimate

$$\approx 52 \div 1 = 52$$

$$0.9 \overline{) 52.1}$$

$$9 \overline{) 521.00}$$

57.88

$$\begin{array}{r} 57.88 \\ -45 \phantom{00} \\ \hline 71 \phantom{00} \\ -63 \phantom{00} \\ \hline 80 \phantom{00} \\ -72 \phantom{00} \\ \hline 80 \phantom{00} \\ -72 \phantom{00} \\ \hline 80 \phantom{00} \\ -72 \phantom{00} \\ \hline 80 \phantom{00} \end{array}$$

$$0.8 \overline{) 6.34}$$

A green horizontal line is drawn above the numbers 6, 3, and 4. A blue arrow points from the decimal point in 0.8 to the decimal point in 6.34. A red arrow points from the decimal point in 6.34 to the right, indicating the decimal point in the quotient should be placed.



$$8 \overline{) 63.400}$$

The long division process is shown with the following steps and annotations:

- 8 goes into 63 seven times (7), with a remainder of 5. A purple arrow points down from the 7 to the 4 in the next step.
- Bring down the 4 to make 54. 8 goes into 54 six times (6), with a remainder of 6. A blue arrow points down from the 6 to the 0 in the next step.
- Bring down the 0 to make 60. 8 goes into 60 seven times (7), with a remainder of 4. A green arrow points down from the 7 to the 0 in the next step.
- Bring down the 0 to make 40. 8 goes into 40 five times (5), with a remainder of 0. A green arrow points down from the 5 to the final 0.

The final quotient is 7.925.

$$0.7 \overline{) 436.1} \rightarrow 7 \overline{) 4361.0}$$

The image shows the conversion of a decimal division problem into a whole number division problem. On the left, the problem is  $0.7 \overline{) 436.1}$ . A blue arrow points from the decimal point in the divisor (0.7) to the decimal point in the dividend (436.1), indicating that both are moved one place to the right. On the right, the equivalent problem is  $7 \overline{) 4361.0}$ . The quotient is shown as 623.0. The steps of the long division are: 7 goes into 43 six times (6), 7 goes into 36 two times (2), 7 goes into 61 three times (3), and 7 goes into 10 one time (1). The final remainder is 0.

0.7  $\overline{)107.8}$  →

$\begin{array}{r} 15.4 \\ 7 \overline{)107.8} \\ \underline{-7} \phantom{.8} \\ 37 \\ \underline{-35} \\ 28 \\ \underline{-28} \\ 0 \end{array}$

$$67.95 \div 1.2 =$$



12

$$\begin{array}{r} \overline{56.625} \\ 12 \overline{) 679.500} \\ \underline{-60} \phantom{0} \phantom{0} \\ 79 \phantom{0} \phantom{0} \\ \underline{-72} \phantom{0} \\ 79 \phantom{0} \\ \underline{-72} \phantom{0} \\ 30 \phantom{0} \\ \underline{-24} \phantom{0} \\ 60 \phantom{0} \\ \underline{-60} \\ 0 \end{array}$$

## Class/ Homework

pg. 106 # 4<sup>abc</sup>, #5<sup>abcd</sup>

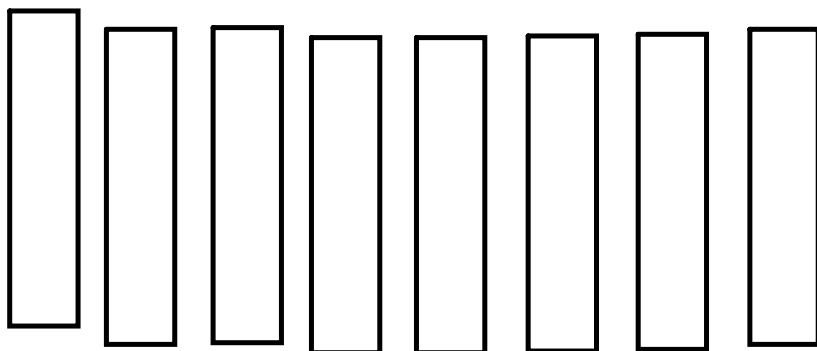
4a)  $5 \overline{)59.5}$       b)  $0.2 \overline{)195.3}$



pg 106

$$1 \text{ a) } 0.8 \div 0.1$$

8 tenths  $\div$  one tenth



How many tenths?

8

