

Topic 5-1: Estimating Quotients 2 Digit Divisors

★ You can use compatible numbers to estimate quotients. Think "basic facts."

$$\begin{array}{r} 1. \quad 1,598 \div 82 \\ \quad \downarrow \quad \downarrow \\ 1,600 \div 80 = 20 \end{array}$$

Check for
Reasonableness:
 $80 \times 20 = 1600 \checkmark$

$$\begin{array}{r} 2. \quad 2,863 \div 43 \\ \quad \downarrow \quad \downarrow \\ 2,800 \div 40 = 70 \end{array}$$

$$40 \times 70 = 2800 \checkmark$$

$$\begin{array}{r} 3. \quad 2,085 \div 71 \\ \quad \downarrow \quad \downarrow \\ 2,100 \div 70 = 30 \end{array}$$

$$30 \times 70 = 2100 \checkmark$$

$$\begin{array}{r} 4. \quad 1,218 \div 58 \\ \quad \downarrow \\ 1,200 \div 60 = 20 \end{array}$$

$$20 \times 60 = 1200 \checkmark$$

Topic 5-2: Dividing Whole Numbers 2-Digit Divisors

★ Dividing Large Numbers:

- Step 1

Estimate to help decide where to place the first digit in the quotient. Try using compatible numbers.

- Step 2

Divide. Multiply. Subtract. Continue this process.

- Step 3

Check by multiplying.

1. $\begin{array}{r} \times 259 \text{ R } 12 \\ 18 \overline{) 4,674} \\ \underline{-36} \downarrow \\ 107 \\ \underline{-90} \downarrow \\ 174 \\ \underline{-162} \\ 12 \end{array}$

$$\begin{array}{r} 259 \\ \times 18 \\ \hline 2072 \\ + 2590 \\ \hline 4662 \\ + 12 \text{ (Add Remainder)} \\ \hline 4674 \checkmark \end{array}$$

★ Know your division vocabulary!

1. $\begin{array}{c} \text{Quotient} \\ \text{Divisor} \overline{) \text{Dividend}} \end{array}$

2. $\text{Dividend} \div \text{Divisor} = \text{Quotient}$

Topic 5-3: More Dividing Whole Numbers

1. $8,944 \div 16 \Rightarrow$ estimate $9,000 \div 15 \approx 600$

$$\begin{array}{r} 559 \\ 16 \overline{) 8,944} \\ \underline{-80} \downarrow \\ 94 \downarrow \\ \underline{-80} \\ 144 \\ \underline{-144} \\ 0 \end{array}$$

559 is close to 600

2.

$$\begin{array}{r} 113 \text{ R}3 \\ 13 \overline{) 1472} \\ \underline{-13} \downarrow \\ 17 \downarrow \\ \underline{-13} \\ 42 \\ \underline{-39} \\ 3 \end{array}$$

$\Rightarrow 1400 \div 14 \approx 100$

113 is close to 100

Topic 5-4: Dividing Decimals by a Whole Number

1.

$$\begin{array}{r} 0.86 \\ 3 \overline{) 2.58} \\ \underline{-24} \\ 18 \\ \underline{-18} \\ 0 \end{array}$$

$$2.58 \div 3 = 0.86$$

2.

$$\begin{array}{r} 22.5 \\ 8 \overline{) 180.0} \\ \underline{-16} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{array} \Rightarrow \text{Add a decimal. Add a zero}$$

$$180 \div 8 = 22.5$$

3.

$$\begin{array}{r} 0.85 \\ 18 \overline{) 15.3} \\ \underline{-144} \\ 90 \\ \underline{-90} \\ 0 \end{array}$$

$$15.3 \div 18 = 0.85$$

Topic 5.5: Dividing Decimals

$$1. \quad \begin{array}{r} 004. \\ 2.45 \overline{) 9.80} \\ \underline{-980} \\ 0 \end{array}$$

$$9.80 \div 2.45 = 4$$

* You must move the decimal over in the divisor to make a whole number.

Move the decimal in the dividend that many places as well.

$$2. \quad \begin{array}{r} 0.06 \\ 0.35 \overline{) 0.021} \end{array} \quad \text{rewrite as} \quad \begin{array}{r} 0.06 \\ 35 \overline{) 2.10} \\ \underline{-210} \\ 0 \end{array} \quad \text{Add a "0"}$$

$$\text{so, } 0.021 \div 0.35 = 0.06$$

$$3. \quad \begin{array}{r} 5. \\ 0.6 \overline{) 3.0} \\ \underline{-30} \\ 0 \end{array} \quad \Rightarrow \quad \begin{array}{r} 5. \\ 6 \overline{) 30} \\ \underline{-30} \\ 0 \end{array}$$

$$3 \div 0.6 = 5$$

$$4. \quad \begin{array}{r} 5 \\ 0.50 \overline{) 2.50} \\ \underline{-250} \\ 0 \end{array} \quad \Rightarrow \quad \begin{array}{r} 5 \\ 50 \overline{) 250} \\ \underline{-250} \\ 0 \end{array}$$

$$2.50 \div 0.50 = 5$$

Topic 5-6: Evaluating Expressions with Decimals

1. $r \div 2.4$; $r = 16.8$

$$16.8 \div 2.4 = \textcircled{7}$$

$$\begin{array}{r} 2.4 \overline{) 16.8} \\ \underline{16.8} \\ 0 \end{array}$$

$$\begin{array}{r} 7 \\ 24 \overline{) 168} \\ \underline{-168} \\ 0 \end{array}$$

★ use substitution

★ The 1st number

always goes inside
the division box.

★ move the decimal

★ Rewrite

2. 9.85×5 ; $5 = 4$

$$\begin{array}{r} ^3 ^2 \\ 9.85 \\ \times ^4 \\ \hline 39.40 \Rightarrow \textcircled{39.4} \end{array}$$

★ use substitution

★ Multiply

★ Add two decimal
places to your
answer

3. $4f - 7$; $f = 12.6$

$$\begin{array}{r} ^2 \\ 12.6 \\ \times ^4 \\ \hline 50.4 \end{array} \quad \begin{array}{r} ^4 ^{10} \\ 50.4 \\ - 7.0 \\ \hline 43.4 \end{array}$$

★ use substitution

★ Follow the order

of operations

$\textcircled{43.4}$

(PEMDAS)

★ Multiply

★ subtract

Topic 5-7: Solving Equations With Decimals

★ Don't forget: To isolate the variable, you must use the inverse operation.

$$1. \quad \frac{13m}{13} = \frac{7.15}{13}$$

$$m = 7.15 \div 13$$

$$\boxed{m = 0.55}$$

$$\begin{array}{r} 0.55 \\ 13 \overline{) 7.15} \\ \underline{-65} \\ 65 \\ \underline{-65} \\ 0 \end{array}$$

$$2. \quad \frac{x}{2.5} = 40$$

$$\times 2.5 \quad \times 2.5$$

$$\boxed{x = 100}$$

$$\begin{array}{r} 40 \\ \times 2.5 \\ \hline 200 \\ + 800 \\ \hline 100.0 \end{array}$$

$$3. \quad \frac{2t}{2} = \frac{12.5}{2}$$

$$t = 12.5 \div 2$$

$$\boxed{t = 6.25}$$

$$\begin{array}{r} 6.25 \\ 2 \overline{) 12.50} \quad \text{Add a "0"} \\ \underline{-12} \\ 05 \\ \underline{-4} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

Topic 5-8: Problem Solving Multiple Step Problems

★ Problem:

Lucy is 13. Her parents are taking her and her friends to a movie. Six of her friends are 12 and two of her friends are 13

12 and under = \$4.50

13 and older = \$7.25

How much will it cost for Lucy and her friends to see a movie?

★ I Know:

Lucy + 2 friends = 13 years old (\$7.25)

6 friends = 12 years old (\$4.50)

$$3 \times 7.25 = 21.75$$

$$6 \times 4.50 = 27.00$$

$$\begin{array}{r} 7.25 \\ \times 3 \\ \hline 21.75 \end{array}$$

$$\begin{array}{r} 4.50 \\ \times 6 \\ \hline 27.00 \end{array}$$

$$\begin{array}{r} 27.00 \\ + 21.75 \\ \hline 48.75 \end{array}$$

The total cost will be \$48.75.