

WARMUP 8 / $(5 \cdot 6) \div 2$

1. Solve the proportion:

$$\frac{4}{5} = \frac{6}{x}$$

$$\frac{4x}{4} = \frac{30}{4}$$

$$x = \frac{15}{2} \text{ or } 7\frac{1}{2} \text{ or } 7.5$$

2. Find the unit rate: 88 students for 4 classes

22 students per class

3. A machinist can produce 114 parts in 6 minutes. At this rate, how many parts can the machinist produce in ~~6~~¹⁸ minutes?

$$\frac{114 \text{ parts}}{6 \text{ min}} \xrightarrow{\times 3} \frac{x \text{ parts}}{18 \text{ min}}$$

$$\begin{array}{r} 114 \\ \times 3 \\ \hline 342 \end{array}$$

342 parts

4. A recipe that makes 8 jumbo blueberry muffins calls for $1\frac{1}{2}$ teaspoons of baking powder. How much baking powder is needed to make 3 dozen jumbo muffins?

$$\frac{8 \text{ muf}}{1\frac{1}{2} \text{ tsp}} = \frac{36 \text{ muf}}{x \text{ tsp}}$$

$$\begin{aligned} 8x &= 36 \cdot 1\frac{1}{2} \\ 8x &= 54 \end{aligned}$$

$$x = 6\frac{3}{4} \text{ tsp}$$



AT THE END OF CLASS...

I will have time to answer questions about problems you were stuck on!!!

WRITE AN EQUATION

Five times the sum of a third of a number plus 20 equals 400.

$$5 \left(\frac{1}{3}x + 20 \right) = \frac{400}{5}$$

$$\frac{1}{3}x + 20 = 80$$

$$\frac{1}{3}x = 60$$

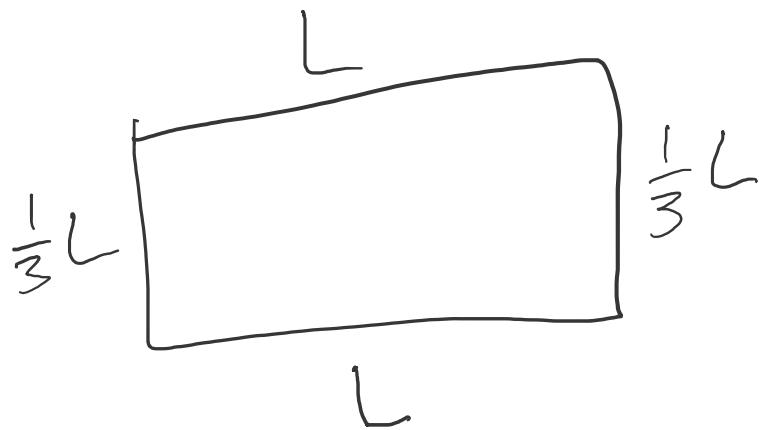
$$x = 180$$

PERIMETER

Millie is planning to use exactly 112 feet of fencing as the border of a rectangular garden. If the width of the garden is $\frac{1}{3}$ of the length of the garden, what is the width of the garden?

Hint: let L be the length of the garden. Draw a picture.

$$\begin{array}{l} \text{Length} = 42 \text{ ft} \\ \boxed{\text{Width} = 14 \text{ ft}} \end{array}$$



$$L + L + \frac{1}{3}L + \frac{1}{3}L = 112$$

$$2\frac{2}{3}L = 112$$

$$\left(\frac{3}{8}\right)\frac{8}{3}L = 112\left(\frac{3}{8}\right)$$

$$1L = 42$$

$$\begin{array}{r} 112 \\ \times 3 \\ \hline 336 \end{array}$$

$$\begin{array}{r} 42 \\ 8 \overline{)336} \\ \underline{32} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

EQUAL COST

A house painting company charges \$376 plus \$12 per hour.
Another painting company charges \$280 plus \$15 per hour.

a. How long is a job for which both companies will charge the same amount?

$$\begin{array}{r} 376 + 12h = 280 + 15h \\ -280 \quad -12h \quad -280 \quad -12h \\ \hline 96 = 3h \end{array}$$

$$\frac{96}{3} = \frac{3h}{3} \rightarrow 32 = h$$

32 hours

b. What will that cost be?

$$376 + 12(32)$$

$$376 + 384$$

\$760

$$280 + 15(32)$$

$$280 + 480$$

\$760

AGE PROBLEM

Mary is 16 years older than Dana and Dana is 13 years younger than Chris. if the sum of their ages is 62, find each person's age.

$$\begin{aligned} \text{Dana} &= D \\ \text{Mary} &= D + 16 \\ \text{Chris} &= D + 13 \end{aligned}$$

$$D + (D + 16) + (D + 13) = 62$$

$$\begin{aligned} 3D + 29 &= 62 \\ -29 \quad -29 & \\ \hline 3D &= 33 \\ D &= 11 \end{aligned}$$

Dana: 11
Mary: 27
Chris: 24

check

$$\begin{array}{r} 11 \\ 27 \\ 24 \\ \hline 62 \end{array} \checkmark$$

CONSECUTIVE NUMBER PROBLEM

Find three consecutive numbers whose sum is 543.

Lowest: x
Middle: $x+1$
Highest: $x+2$

$$x + (x+1) + (x+2) = 543$$

$$\begin{array}{r} 3x + 3 = 543 \\ -3 \quad -3 \end{array}$$

$$\begin{array}{r} 3x = 540 \\ \underline{\quad} \\ 3 \end{array}$$

$$x = 180$$

180, 181, 182

ANOTHER WORD PROBLEM

You and your friend both bought some gum. Your friend spent three times as much as you did. Altogether, you spent \$4.80. How much did you each spend on gum?

$$\begin{array}{l} \text{You: } x \\ \text{Friend: } 3x \end{array}$$

$$x + 3x = \$4.80$$

$$\frac{4x}{4} = \frac{4.80}{4}$$

$$x = 1.20$$

You: \$1.20
Friend: \$3.60

AGE PROBLEM

In 16 years, Lilly will be 5 times as old as she is now. How old is Lilly now?

$$\begin{array}{r} L + 16 = 5L \\ \hline 16 = 4L \\ \frac{16}{4} = \frac{4L}{4} \\ 4 = L \end{array}$$

Lilly is 4.

CONSECUTIVE NUMBERS

The sum of two consecutive numbers is 87. What are the numbers?

$$x + (x+1) = 87$$

$$\begin{array}{r} 2x + 1 = 87 \\ \underline{-1} \quad \underline{-1} \\ 2x = 86 \end{array}$$

$$\frac{2x}{2} = \frac{86}{2}$$

$$x = 43$$

43 and 44

Mr. Young's class did a food drive. Brad brought some cans. Brittany brought twice as many cans as Brad. Belinda brought 7 more cans than Brad. They brought 27 cans total. Set up an equation and solve it to find out how many cans Brad brought.

Brad: C
Brittany: $2C$
Belinda: $C + 7$

$$\begin{aligned}C + 2C + (C + 7) &= 27 \\4C + 7 &= 27 \\4C &= 20\end{aligned}$$

$$C = 5$$

5 cans

If the perimeter of the triangle is **38**, find the value of **x**.

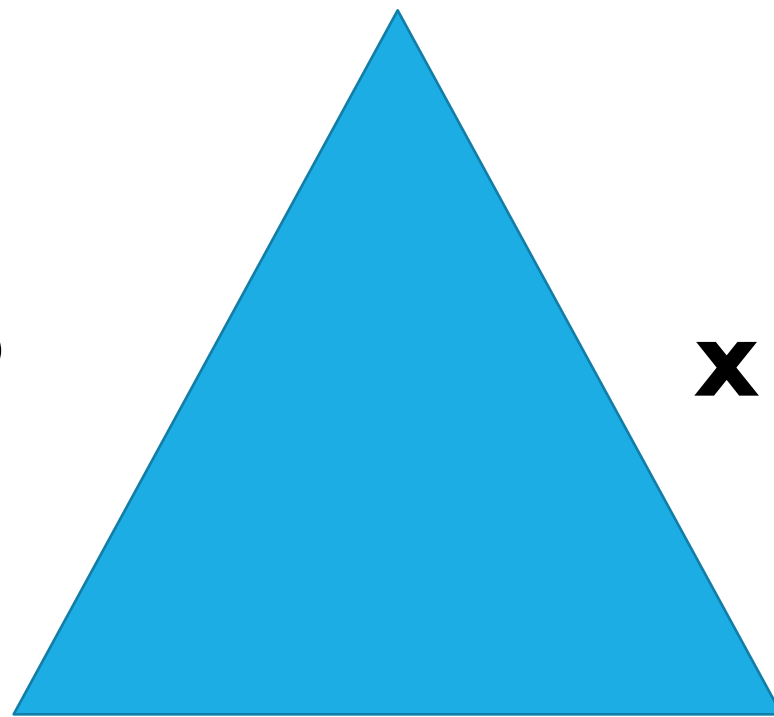
$$(10x - 5) + (x + 13) + (4x) = 38$$

$$15x + 8 = 38$$

$$15x = 30$$

$$x = 2$$

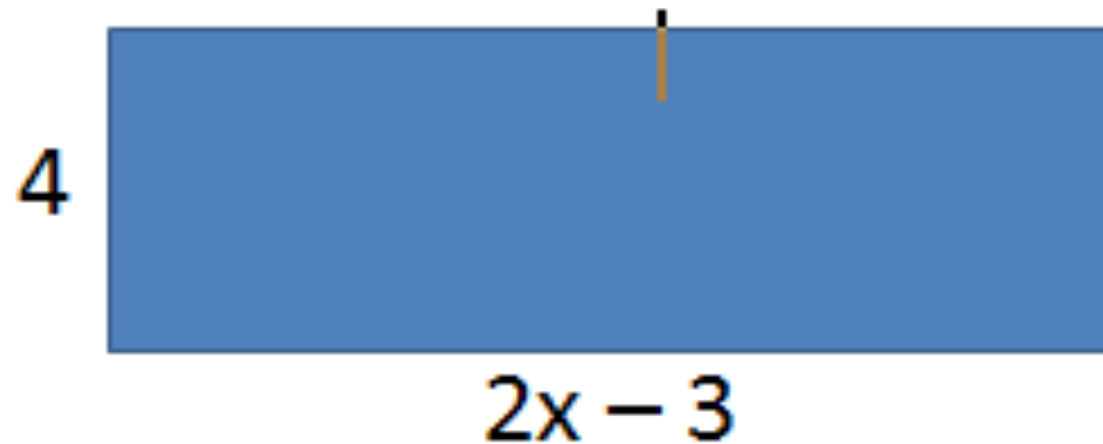
$$10x - 5$$



$$x + 13$$

$$4x$$

If the **area** of the rectangle is 44, find the value of x :



$$4(2x - 3) = 44$$

$$\begin{array}{r} 8x - 12 = 44 \\ +12 \quad +12 \end{array}$$

$$8x = 56$$

$$x = 7$$

Cool Down

$$5(x - 20) = \frac{1}{2}(4x + 4)$$

$$\begin{array}{r} 5x - 100 = 2x + 2 \\ -2x \quad +100 \quad -2x \quad +100 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{102}{3}$$

$$\boxed{x = 34}$$

HOMework

**Brown Equations Worksheet
(Due tomorrow!)**