

7th Grade
Dec 11, 2020

Today we will:
-review video notes
-begin Reteach WS
together; finish on
own in class

HOMEWORK:

ALEKS 60 minutes
and 5 topics due
MONDAY night 11:59
pm



5-7 Solving Proportions

Proportions make two equivalent fractions

$$\frac{2}{3} = \frac{x}{39}$$

$$\frac{2}{3} \times \frac{13}{13} = \frac{26}{39}$$

This is 1

$x = 26$

The cross products of a proportion are equal

$$\frac{60}{100} = \frac{x}{80}$$

~~60 = x~~
~~100 = 80~~

$$60 \cdot 80 = 100 \cdot x$$

$$\frac{4800}{100} = \frac{100 \cdot x}{100} \div 100$$

$$48 = x$$

Solve the proportion by either multiplying by one or by cross-multiplying

1. $\frac{7}{16} = \frac{x}{32}$

$$\frac{7}{16} \times \frac{2}{2} = \frac{14}{32}$$

~~$x = 14$~~

4. $\frac{11.5}{6} = \frac{n}{22.8}$

$$11.5 \cdot 22.8 = 6 \cdot n$$

$$\frac{11.5 \cdot 22.8}{6} = n$$

$43.7 = n$

2. $\frac{7}{4} = \frac{21}{b}$

$$\frac{7}{4} \times \frac{3}{3} = \frac{21}{12}$$

$b = 12$

5. $\frac{14}{w} = \frac{8.4}{4.5}$

$$14(4.5) = 8.4w$$

$$\frac{14(4.5)}{8.4} = w$$

$7.5 = w$

3. $\frac{y}{9} = \frac{4}{12} \div \frac{1}{3}$

$$\frac{y \cdot 4}{36} = \frac{4 \cdot 1}{12}$$

$$\frac{15}{6} = \frac{5}{2}$$

$n = 5$

Be careful—when you solve a real-world problem using a proportion, be sure to compare the quantities in the same order

Real-world example
Cindy paid \$34.60 for 4 tickets to a movie. How much would it cost for 7 tickets?

$$\frac{\$}{\text{tickets}} = \frac{34.60}{4} = \frac{5}{7}$$

$$34.60(7) = 5 = 60.55$$

1 subscription for \$21
28 subscriptions for x dollars

$$\frac{\text{subs}}{\$} = \frac{1}{21} = \frac{28}{x}$$

$$x = 21 \times 28 = 588$$

20 ounces at \$7
17 ounces at x dollars

$$\frac{\$}{\text{oz}} = \frac{20}{7} = \frac{17}{x}$$

$$17 \cdot 7 = 20x$$

$$\frac{17 \cdot 7}{20} = x = \$5.95$$

1 cm represents 3.5 km
2.4 cm represents x km

$$\frac{\text{cm}}{\text{km}} = \frac{1}{3.5} = \frac{2.4}{x}$$

$$x = 3.5(2.4)$$

$x = 8.4 \text{ km}$

1 gallon of water weighs $8\frac{1}{3}$ pounds
30 gallons of water weighs x pounds

$$\frac{1 \text{ gal}}{8\frac{1}{3} \text{ lb.}} = \frac{30 \text{ gal}}{x \text{ lb.}}$$

$$8\frac{1}{3} \cdot 30 = \frac{25}{3} \times 30$$

$x = 250 \text{ lb.}$

NAME _____ DATE _____ PERIOD _____

Lesson 7 Reteach

Solving Proportions

* Calculators OK *

A **proportion** is an equation stating that two ratios or rates are equal.

$$\frac{a}{b} = \frac{c}{d}$$

An important property of proportions is that their cross products are equal. You can use this property to solve problems involving proportions.

$$\begin{array}{c} a \quad c \\ \diagdown \quad \diagup \\ b \quad d \\ \diagup \quad \diagdown \\ ad = bc \end{array}$$

Remember this

Example

Solve the proportion $\frac{14.1}{c} = \frac{3}{4}$.

$$\frac{14.1}{c} = \frac{3}{4}$$

$$14.1 \cdot 4 = c \cdot 3$$

Cross products

$$56.4 = 3c$$

Multiply.

$$\frac{56.4}{3} = \frac{3c}{3}$$

Divide.

$$18.8 = c$$

Simplify.

The solution is 18.8.

To solve, multiply the two you know (14.1×3) and divide by the other one ($\div 3$)

If you can, use equivalent fractions. (It's easier.)

Ex: $\frac{2}{3} = \frac{x}{9}$

Exercises

Solve each proportion.

1. $\frac{x}{9} = \frac{16}{12}$

$16 \times 9 \div 12 =$
 $x =$

2. $\frac{32}{28} = \frac{w}{7}$

$32 \cdot 7 \div 28 =$
 $w =$

3. $\frac{5}{4} = \frac{60}{132}$

4. $\frac{36}{21} = \frac{24}{s}$

5. $\frac{a}{64} = \frac{225}{480}$

6. $\frac{42}{w} = \frac{56}{8}$

7. $\frac{1}{10} = \frac{m}{12}$

8. $\frac{5}{3} = \frac{85}{h}$

9. $\frac{24}{g} = \frac{2}{30}$

10. $\frac{f}{21} = \frac{57}{63}$

11. $\frac{22}{z} = \frac{121}{16.5}$

12. $\frac{2}{3} = \frac{k}{12.6}$

13. $\frac{r}{9} = \frac{5}{20}$

14. $\frac{d}{21} = \frac{1.5}{3.5}$

15. $\frac{46}{57.5} = \frac{360}{q}$

16. $\frac{4.2}{4.8} = \frac{d}{80}$

17. $\frac{1}{c} = \frac{4.5}{11.7}$

18. $\frac{0.3}{n} = \frac{4.75}{14.25}$

19. $\frac{9.1}{14.7} = \frac{1.3}{p}$

20. $\frac{0.4}{3} = \frac{y}{98.25}$

21. $\frac{v}{33.44} = \frac{1}{3.2}$



Measurement Conversions

Length	
Customary to Metric	Metric to Customary
1 in = 2.54 cm	1 cm = 0.394 in
1 ft = 0.305 m	1 m = 3.279 ft
1 yd = 0.914 m	1 m = 1.094 yd
1 mi = 1.609 km	1 km = 0.621 mi
1 m = 100 cm	
1 km = 1000 m	
1 mi = 5280 ft	
1 yd = 3 ft	

Capacity	
Customary to Metric	Metric to Customary
1 fl oz = 29.574 mL	1 mL = 0.034 fl oz
1 pt = 0.473 L	1 L = 2.114 pt
1 qt = 0.946 L	1 L = 1.057 qt
1 gal = 3.785 L	1 L = 0.264 gal
1 L = 1000 mL	
1 c = 8 fl oz	
1 pt = 2 c	
1 qt = 2 pt	
1 gal = 4 qt	

Mass or Weight	
Customary to Metric	Metric to Customary
1 oz = 28.350 g	1 g = 0.035 oz
1 lb = 0.454 kg	1 kg = 2.203 lb
1 kg = 1000 g	