

## Practice 25

### Ratio, Proportion, and Similarity

Lessons 7-1 through 7-3

Express each ratio in simplest form.

1.  $\frac{20}{45} = \frac{4}{9}$  (Divide by 5)

3.  $\frac{2m}{7mn} = \frac{2}{7n}$  (Divide by  $m$ )

5.  $(x-5):3(x-5) = 1:3$

2. 8 cm to 2 m  $\frac{8\text{cm}}{200\text{cm}} = 1\text{cm to } 25\text{cm}$

~~4.~~  $\frac{15n^2}{40n}$

~~6.~~  $\frac{2(a+7)}{6a+42}$

Complete each statement.

7. If  $\frac{a}{6} = \frac{4}{7}$ , then  $7a = 24$ . Cross Product

8. If  $\frac{b}{c} = \frac{d}{e}$ , then  $\frac{e}{d} = \frac{c}{b}$ . Reciprocals

9. If  $\frac{x}{7} = \frac{c}{9}$ , then  $\frac{x}{c} = \frac{7}{9}$ . Interchange

10. If  $5:x = 9:3$ , then  $9x = 15$ . Cross Product

~~11.~~ If  $\frac{a}{8} = \frac{b}{12}$ , then  $\frac{a+8}{8} =$

~~12.~~ If  $\frac{x}{5} = \frac{3}{4}$ , then  $\frac{x+3}{9} =$

Find the value of  $x$ .

13.  $\frac{x}{20} = \frac{3}{5}$ ,  $x = 12$

14.  $\frac{7}{2} = \frac{3x}{5}$ ,  $x = 5.83$

15.  $\frac{x-2}{3} = \frac{1}{4}$ ,  $x = 2.75$

16.  $\frac{x-4}{x+4} = \frac{1}{3}$ ,  $x = 8$

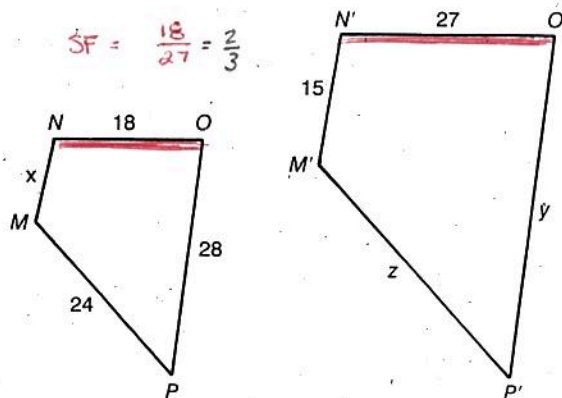
17.  $\frac{4}{2x-5} = \frac{3}{x+7}$ ,  $x = 21.5$

~~18.~~  $\frac{x}{x-2} = \frac{x+5}{x}$ ,  $x =$

19. The measures of two supplementary angles are in the ratio 5:13.  
Find the measure of each angle.

smaller angle  $50^\circ$  larger angle  $130^\circ$ 

20. Quad.
- $MNOP \sim$
- quad.
- $M'N'O'P'$
- .

a. The scale factor of quad.  $MNOP$ to quad.  $M'N'O'P'$  is  $2:3$ b. The value of  $x = 10$ c. The value of  $y = 42$ d. The value of  $z = 36$ 

b.)  $\frac{2}{3} = \frac{x}{15}$   
 $30 = 3x$   
 $10 = x$

c.)  $\frac{2}{3} = \frac{28}{y}$   
 $2y = 84$   
 $y = 42$

d.)  $\frac{2}{3} = \frac{24}{z}$   
 $2z = 72$   
 $z = 36$

$$(13) \frac{x}{25} = \frac{3}{5}$$

$$5x = 60$$

$$x = 12$$

$$(14) \frac{1}{2} = \frac{5x}{5}$$

$$35 = 6x$$

$$5.83 \approx x$$

$$(15) \frac{4x-8}{3} = \frac{1}{4}$$

$$4x-8 = 3$$

$$4x = 11$$

$$x = 2.75$$

$$(16) \frac{3x-12}{x+4} = \frac{1}{3}$$

$$3x-12 = x+4$$

$$2x = 16$$

$$x = 8$$

$$(17) \frac{4}{2x-5} = \frac{3}{x+7}$$

$$4x+28 = 6x-15$$

$$43 = 2x$$

$$21.5 = x$$

$$(18) \frac{x}{x-2} = \frac{x+5}{x}$$

$$x^2 = (x-2)(x+5)$$

$$x^2 = x^2 + 5x - 2x - 10$$

$$x^2 = x^2 + 3x - 10$$

$$0 = 3x - 10$$

$$10 = 3x$$

$$3.33 = x$$

(19) Supp  $\angle$ 's in 5:13 ratio

$$5x + 13x = 190$$

$$18x = 180$$

$$x = 10$$

$$5(10) = 50^\circ$$

$$13(10) = 130^\circ$$