8.1–8.3 Review   Partner Practice

1. If $\dfrac{a}{5x-y} = \dfrac{b}{9x+y}$ find the ratio of x to y in terms of a and b.

$a(9x+y) = b(5x-y)$

$9xa + ya = 5xb - yb$

$9xa + yb \quad -9xa \quad +yb$

$yb + ya = 5xb - 9xa$

$y(b+a) = x(5b-9a)$

$\dfrac{y(b+a)}{5b-9a} = \dfrac{x(5b-9a)}{5b-9a}$

$\boxed{\dfrac{b+a}{5b-9a} = \dfrac{x}{y}}$

2. Find the arithmetic and geometric mean between 8 and 20.

arithmetic: $\dfrac{8+20}{2} = \boxed{14}$

geometric: $\dfrac{8}{x} = \dfrac{x}{20}$ $x^2 = 160$

$x = \pm\sqrt{160}$

$x = \pm\sqrt{16\cdot 10}$

$\boxed{x = \pm 4\sqrt{10}}$

2. If (x-3) is the mean proportional between 4 and 9, solve for x.

$\dfrac{4}{x-3} = \dfrac{x-3}{9}$

$(x-3)^2 = 36$

$x^2 - 6x + 9 = 36$

$x^2 - 6x - 27 = 0$

$(x-9)(x+3) = 0$

$\boxed{x = 9 \ -3}$

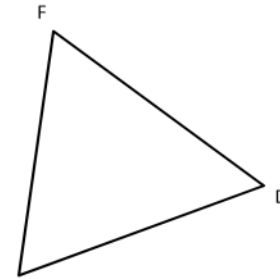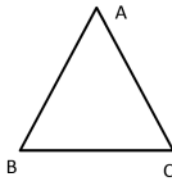4. If the ratio of the sides of two similar polygons is 2:5, what is the ratio of their areas?

$\left(\dfrac{2}{5}\right)^2 = \dfrac{4}{.25}$

8 is the MP between 7 and what #?

$\dfrac{7}{8} = \dfrac{8}{x}$

5. Given ΔABC ~ ΔDEF with measurements as shown. Solve for x and y.

m∠C = 2x + 3y + 100
m∠D = 2x + y + 75
m∠E = x + 2y
m∠F = 104

① $2x + 3y + 100 = 104$
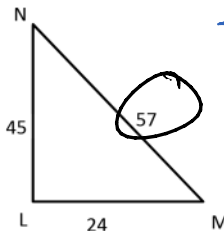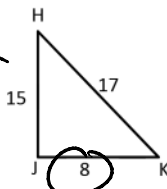$2x + 3y = 4$

② $2x + y + 75 + x + 2y + 104 = 180$

$3x + 3y = 1$

$2x + 3y = 4$
$-3x - 3y = -1$
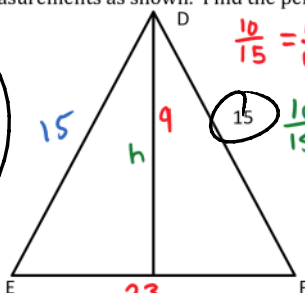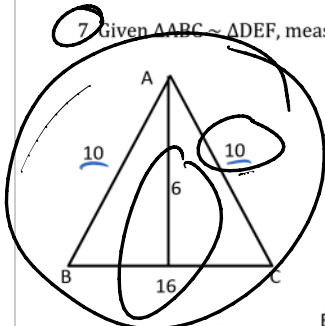$-x = 3$ $x = -3$

$y = \dfrac{10}{3}$

6. Is ΔHJK ~ ΔLMN ?

No

$\dfrac{2}{3} = \dfrac{36}{x}$

$x = 54$

7. Given ΔABC ~ ΔDEF, measurements as shown. Find the perimeter and area of ΔDEF.

$\dfrac{10}{15} = \dfrac{16}{EF}$ $10\,EF = 240$
$EF = \dfrac{240}{24} = 23$

$\dfrac{10}{15} = \dfrac{6}{h}$ $10h = 90$
$h = 9$

P = 15 + 15 + 23 = 53

A = $\dfrac{1}{2}(23)(9) = \dfrac{207}{2} = 103.5$

$\dfrac{4}{9} = \dfrac{48}{x}$

B   16   C

E   **23**   F

$P = 15 + 15 + 23 = 55$

$A = \frac{1}{2}(23)(9) = \frac{207}{2} = 103.5$

Kiss FM

$x = 108$

8. Is △XYZ ~ △NOP? If yes, how do you know?

X

11

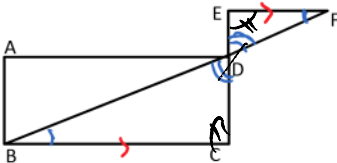Y   6   Z

P   13.75   N

7.5

O
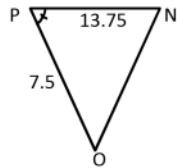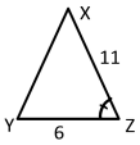
$\frac{6}{7.5} = \frac{4}{5}$ ✓

$\frac{11}{13.75} = \frac{4}{5}$ ✓

$\angle Z \cong \angle P$

Yes, SAS ~

9. Given: $\overline{EF} \parallel \overline{BC}$

    Prove: △EFD ~ △CBD

A

E   x   F

D

B   C

1. $\overline{EF} \parallel \overline{BC}$	Given
2. $\angle EFD \cong \angle CBD$	‖ lines ⇒ alt. int. ∠s ≅
3. $\angle EDF \cong \angle BDC$	vertical ∠s are ≅
4. △EFD ~ △CBD	AA

10. Greg is 6 feet tall and Kathy is 4 ½ feet tall. If Greg's shadow is 16 feet long, how long is Kathy's?

6   45

x

16

$\frac{6}{16} = \frac{4.5}{x}$

$6x = 72$

$x = 12$ feet long