

SLR, PR, AR and VR Applied Notes

Solving for Unknown Values Using Proportions

SLR = $SF = PR$	AR = SLR^2	VR = SLR^3
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1.) Find the area.

The ratio of the lengths of the corresponding sides of 2 regular octagons is $\frac{8}{3}$. The area of the larger octagon is 320ft^2 . Find the area of the smaller octagon.

$$SLR = \frac{8}{3}$$

$$\text{Area} = 320\text{ft}^2$$

$$AR = \left(\frac{8}{3}\right)^2 = \frac{64}{9}$$

$$\frac{64}{9} = \frac{320}{x}$$

$$64x = 9(320)$$

$$64x = 2880$$

Area of the smaller polygon is 45ft^2

2.) Find the side ratio.

The areas of 2 similar pentagons are 32in^2 and 72in^2 . What is their similarity (side) ratio? What is the ratio of their perimeter?

$$AR = \frac{32}{72} = \frac{4}{9} \leftarrow \text{simplified}$$

$$SLR = \sqrt{AR}$$

$$SLR = \frac{\sqrt{4}}{\sqrt{9}} = \frac{2}{3}$$

SLR = $\frac{2}{3}$
and
PR = $\frac{2}{3}$

3.) Find the perimeter & area of similar figures.

The similarity (side) ratio of two similar Δ is $5:3$. The perimeter of the smaller Δ is 36cm , and its area is 18cm^2 . Find the perimeter & area of the larger Δ .

$$SLR = \frac{5}{3} = PR$$

\therefore

$$AR = \frac{25}{9}$$

Perimeter

$$\frac{5}{3} = \frac{x}{36}$$

$$180 = 3x$$

$$60\text{cm} = x$$

AREA

$$\frac{25}{9} = \frac{x}{18}$$

$$450 = 9x$$

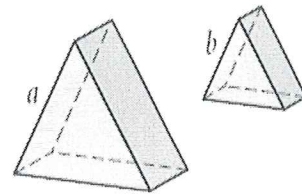
$$50\text{cm}^2 = x$$

4.) Find the volume.

The triangular prisms are similar and the ratio of a to b is $\frac{5}{2}$.

Volume of large prism = 250 cm^3

Volume of smaller prism = _____



$$SLR = \frac{5}{2} \Rightarrow VR = \frac{5^3}{2^3} = \frac{125}{8}$$

$$\frac{125}{8} = \frac{250}{X}$$

$$125X = 2000$$

$$X = 16 \text{ cm}^3$$

5.) Find the radius.

The right cylinders are similar and $r = 10 \text{ cm}$.

Volume of large cylinder = 64 cm

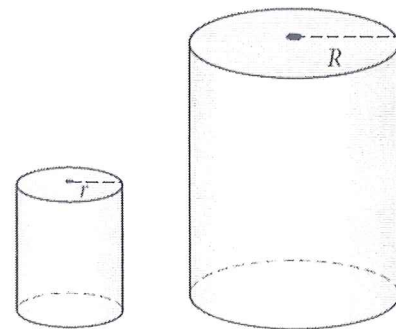
Volume of small cylinder = 8 cm

$R =$ _____

$$VR = \frac{64}{8} = \frac{8}{1} = 8 \quad VR = SLR^3$$

$$SLR = \sqrt[3]{VR}$$

$$\sqrt[3]{8} = 2 = SLR$$



$$\frac{X}{10} = \frac{2}{1}$$

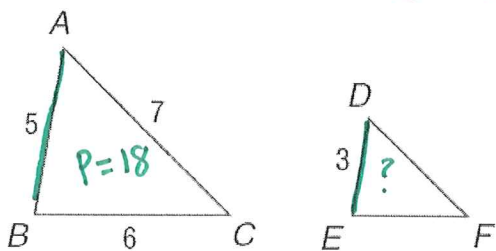
$$X = 20 \text{ cm}$$

well, $R = 20 \text{ cm} \therefore$

Pg 419 # 1, 2, 8-10, 12, 13

Directions: Find the perimeter of the given triangle.

1. Find the perimeter of $\triangle DEF$, if $\triangle ABC \sim \triangle DEF$. Where $AB = 5$, $BC = 6$, $AC = 7$, and $DE = 3$.



$$PR = SLR$$

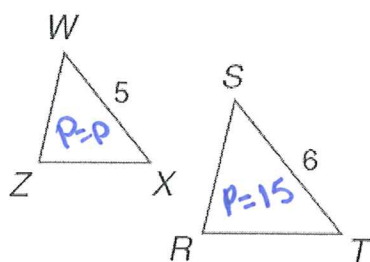
$$\frac{P}{18} = \frac{3}{5}$$

$$5P = 54$$

$$P = \frac{54}{5}$$

$$P = 10.8$$

2. Find the perimeter of $\triangle WZX$, if $\triangle WZX \sim \triangle SRT$. Where $ST = 6$, $WX = 5$, and the perimeter of $\triangle SRT = 15$ units.



$$PR = SLR$$

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

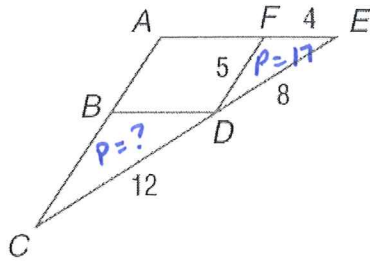
$$6P = 75$$

$$P = \frac{75}{6}$$

$$P = 12.5$$

Name: _____

8. Find the perimeter of $\triangle BCD$, if $\triangle BCD \sim \triangle FDE$. Where $CD = 12$, $FD = 5$, $FE = 4$, and $DE = 8$.



$$PR = SLR$$

$$\frac{P}{17} = \frac{12}{8}$$

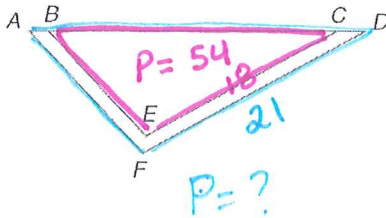
$$P = 25.5$$

$$8p = 204$$

$$p = \frac{204}{8}$$

$$p = \frac{51}{2}$$

9. Find the perimeter of $\triangle ADF$, if $\triangle ADF \sim \triangle BCE$. Where $BC = 24$, $EB = 12$, $CE = 18$, and $DF = 21$.



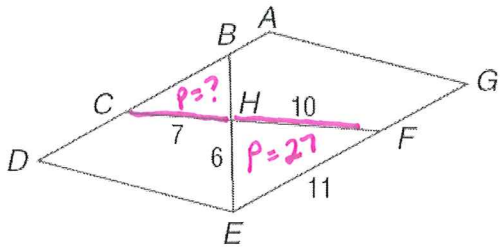
$$PR = SLR$$

$$\frac{P}{54} = \frac{21}{18}$$

$$18p = 1134$$

$$P = 63$$

10. Find the perimeter of $\triangle CBH$, if $\triangle CBH \sim \triangle FEH$ and $ADEG$ is a parallelogram. Where $CH = 7$, $FH = 10$, $FE = 11$, and $EH = 6$.



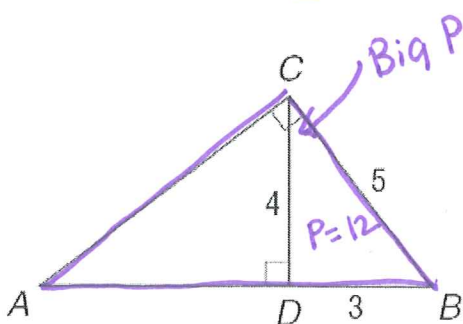
$$\frac{P}{27} = \frac{7}{10}$$

$$10p = 189$$

$$p = \frac{189}{10}$$

$$P = 18.9$$

12. Find the perimeter of $\triangle ABC$, if $\triangle ABC \sim \triangle CBD$. Where $CD = 4$, $BD = 3$, and $CB = 5$.



$$\frac{P}{12} = \frac{5}{3}$$

$$3p = 60$$

$$p = 20$$