

#1. Solve for x

The || lines \div the transversals proportionally!

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$$\frac{4}{2} = \frac{x+1}{3}$$

$$12 = 2(x+1)$$

$$12 = 2x+2$$

$$10 = 2x$$

$$x = 5$$

#2. Solve for y

Note: The || lines do NOT \div themselves prop. .
must use $\sim \Delta$'s

#2. Solve for y

Be careful!

$$\sim \Delta$$
's: $\frac{5}{7} = \frac{6}{y}$

$$42 = 5y$$

$$y = 8.4$$

#3. Solve for x

The \angle bisector \div the sides of the Δ prop.

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$$\frac{6}{3} = \frac{8}{x-3}$$

$$24 = 6(x-3)$$

$$24 = 6x-18$$

$$42 = 6x$$

$$x = 7$$

#4. Solve for x

Diagram showing three parallel horizontal lines intersected by two transversals. The top transversal has segments of length 2 and x. The bottom transversal has segments of length 4 and 5.

11 lines \div the transversals prop.

#4. Solve for x

$$\frac{x}{2} = \frac{5}{4}$$

$$10 = 4x$$

$$x = \frac{10}{4}$$

Diagram showing three parallel horizontal lines intersected by two transversals. The top transversal has segments of length 2 and x. The bottom transversal has segments of length 4 and 5.

#5. Given $\square MNPQ \sim \square RSTU$

Find the perimeter and area of $\square RSTU$

Diagram showing two similar rectangles. The smaller rectangle MNPQ has a width of 4 cm, perimeter P = 14 cm, and area A = 12 cm². The larger rectangle RSTU has a width of 6 cm.

*ratio of sides = ratio of perimeters
*ratio of sides² = ratio of areas

#5. Given $\square MNPQ \sim \square RSTU$

Ratio: $\frac{4}{6} = \frac{2}{3}$

Find the perimeter and area of $\square RSTU$

Diagram showing two similar rectangles. The smaller rectangle MNPQ has a width of 4 cm, perimeter P = 14 cm, and area A = 12 cm². The larger rectangle RSTU has a width of 6 cm.

Perimeter: $\frac{2}{3} = \frac{14}{x}$ $2x = 42$ $x = 21 \text{ cm}$

Area: $(\frac{2}{3})^2 = \frac{12}{A}$ $\frac{4}{9} = \frac{12}{A} \rightarrow 4A = 108$ $A = 27 \text{ cm}^2$

#6. The ratio of the area of $\triangle ABC$ to the area of $\triangle DEF$ is $\frac{16}{25}$.

What is the similarity ratio of $\triangle ABC$ to $\triangle DEF$?

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$$\frac{\sqrt{16}}{\sqrt{25}} = \left(\frac{a}{b}\right)^2 \quad \left[\frac{4}{5}\right] = \text{ratio}$$

What is the similarity ratio of $\triangle ABC$ to $\triangle DEF$?

#7. A blueprint for a museum uses a scale of $\frac{1}{4}$ in. to 1 ft. One of the rooms on the blueprint is $3\frac{3}{4}$ in. long.

How long is the actual room?



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How long is the actual room?

$$\frac{\text{in}}{\text{ft}} \cdot \frac{.25}{1} = \frac{3.75}{l} \rightarrow 3.75 = .25l$$

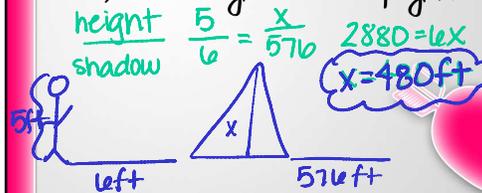
$$l = 15\text{ft}$$



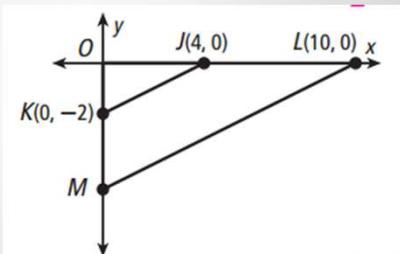
#8. An Egyptian used shadows to measure the height of a pyramid. If a 5-foot staff had a 6-foot shadow, and the pyramid's shadow was 576 feet, how high is the pyramid?



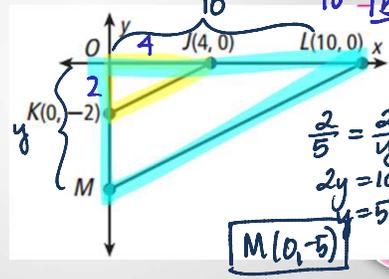
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#9. $\triangle JOK \sim \triangle LOM$. Find the coordinates of M and the scale factor.



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10. $\triangle ROS \sim \triangle POQ$.
Find the coordinates of S and the scale factor.

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Find the coordinates of S and the scale factor.

scale factor = $\frac{4}{10} = \frac{2}{5}$

$\frac{2}{5} = \frac{x}{20}$
 $5x = 40$
 $x = 8$

$S(0, -8)$

11. Find the point on the directed segment from $G(-2, 0)$ to $H(5, 8)$ that divides it in the ratio of 1:3.

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$m = \frac{8-0}{5-(-2)} = \frac{8}{7} \leftarrow \text{rise/run}$

rise = $\frac{1}{4}(8) = 2$ (y's)
run = $\frac{1}{4}(7) = \frac{7}{4} = 1.75$ (x's)

$G(-2, 0)$
 $+ 1.75, 2$
 $P(-.25, 2)$

12. Determine if the triangles are similar. If so, write similarity statement and reason.

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Since $TR \parallel AN$, then alternate interior \angle s \cong .
 $\angle R \cong \angle A$ and $\angle T \cong \angle N$

$\triangle TRI \sim \triangle ANI$ by AA~

could also use Vertical \angle 's