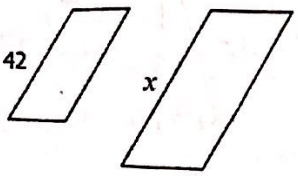
Main Ideas/ Questions	Notes	7.2

Using Similar Figures to Solve for Missing Measures

7. If the figures below are similar with a scale factor of 2:3, find the value of x.



$\frac{42}{63} \downarrow \frac{2}{3}$

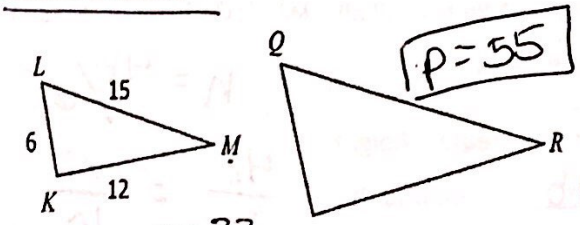
$\frac{2}{3} = \frac{42}{x}$

$3(42) = 2x$

$\frac{126}{2} = \frac{2x}{2}$

$x = 63$

8. If $\Delta KLM \sim \Delta PQR$ and the scale factor is 3:5, find the perimeter of ΔPQR.



$P = 55$

$P = 6 + 12 + 15 = 33$

$\frac{3}{5} = \frac{\text{perim KLM}}{\text{perim PQR}}$

$\frac{3}{5} = \frac{33}{x}$

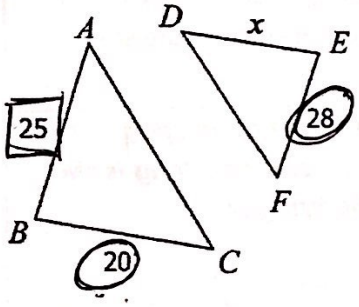
$5(33) = 3x$

$\frac{165}{3} = \frac{3x}{3}$

$x = 55$

9. If $\Delta ABC \sim \Delta DEF$, find the value of x.

123 123



ΔABC $\frac{20}{28} = \frac{25}{x}$

ΔDEF

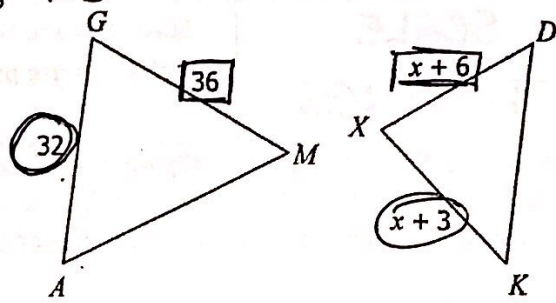
$28(25) = 20x$

$\frac{700}{20} = \frac{20x}{20}$

$x = 35$

10. If $\Delta AGM \sim \Delta KXD$, find the value of x.

123 123



$\frac{32}{x+3} = \frac{36}{x+6}$

$32(x+6) = 36(x+3)$

$32x + 192 = 36x + 108$

$-32x \quad -32x$

$192 = 4x + 108$

$-108 \quad -108$

$\frac{84}{4} = \frac{4x}{4}$

$x = 21$

Using Similarity

11. Your class is making a rectangular poster for a rally. The poster's design is 6 in. high by 10 in. wide. The space allowed for the poster is 4ft high by 8 ft. wide. What are the dimensions of the largest poster that will fit in the space?

STEP 1: Determine whether the height or width will fill the space first.

h = 4ft → 48 inches
w = 8ft → 96 inches

avail height/w
poster height/ w

$h = 48/6 = 8$ $\quad w = 96/10 = 9.6$

height fills first, enlarge by 8 times

STEP 2: The greatest height is 48 in. find the width.

$\frac{48}{6} = \frac{x}{10}$ $\quad \frac{6x}{6} = \frac{480}{6}$ $\quad x = 80$ in

48 in by 80 in
↓
4 ft by 6 ft 8 in

12. The design for a mural is 16 in. wide and 9 in. high. What are the dimensions of the largest possible complete mural that can be painted on a wall 24 ft. wide by 14ft. high?

w = 16 in $\quad w = 288$
h = 9 in $\quad h = 168$

$w = 288/16 = 18$ $\quad h = 168/9 = 18.66$

$\frac{288}{16} = \frac{x}{9}$

$16x = 2592$

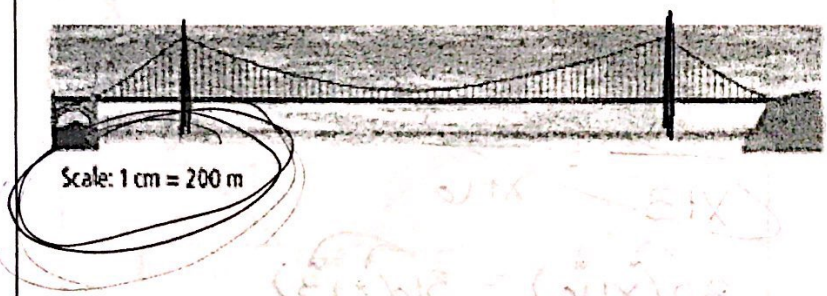
$x = 162$

288 in by 162 in
↓
24 ft by 13 ft 6 in

SCALE DRAWINGS

SCALE: a ratio that compares each length in the scale drawing to the actual length. We can use proportions to find the actual dimensions represented in the scale drawing.

Design The diagram shows a scale drawing of the Golden Gate Bridge in San Francisco. The distance between the two towers is the main span. What is the actual length of the main span of the bridge?



13. If the length of the main span in the scale drawing is 6.4cm, how long is the actual span of the bridge?

$\frac{1\text{ cm}}{200\text{m}} = \frac{6.4\text{ cm}}{x\text{ m}}$

$200(6.4) = x$

$1280\text{ m} = x$

14. You want to make a scale drawing of New York City's Empire State Building using the scale 1in. = 250 ft. If the building is 1250 ft. tall, how tall should you make the building in your scale drawing?