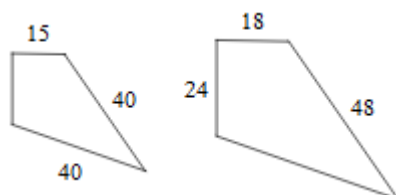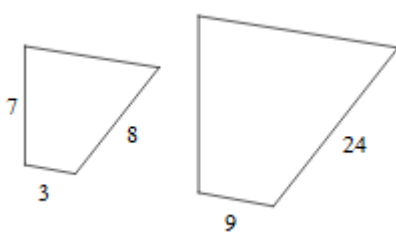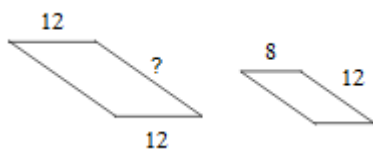**See ANSWERS below on PAGE 3.**

1.

2.

3.
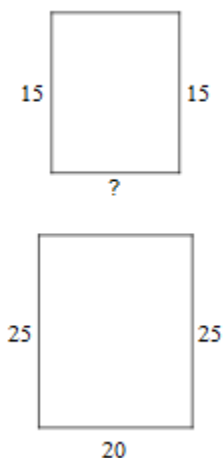

The polygons in each pair are similar. Find the missing side length.
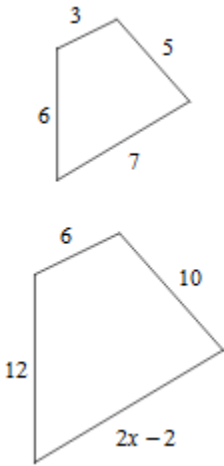
4.

5.

The polygons in each pair are similar. Solve for x.

6.
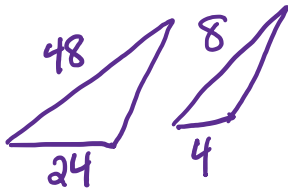

7. ΔABC is similar to ΔDEF. Their scale factor is 7:9. If the perimeter of ΔABC is 42, what it the perimeter of ΔDEF?

8. ABCD is similar to LMNP. AB = 14, BC = 10, NM = x + 6, and ML = x + 9. Find x, the scale factor, the length of LM, and the length of MN.

9. ΔABC is similar to ΔDEF. AB = 6, AC = 12, ED = x – 3, and FD = x + 1. Find x, the scale factor, the length of DE, and the length of DF.
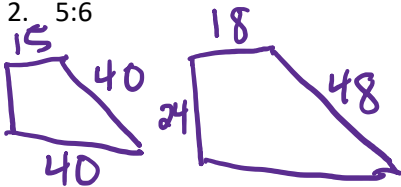
Answers:

1. 1:6

48 8
24 4

$\frac{8x}{8} = \frac{48}{8}$ $x = 6$ $\boxed{1:6}$

$\boxed{\text{Scale factor} = 6}$
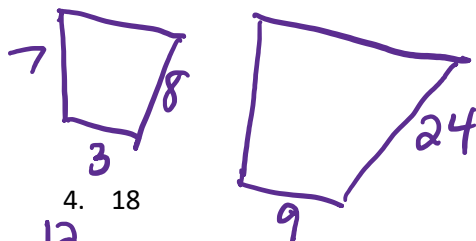
2. 5:6

15 40 18 48 24 40

$\frac{15x}{15} = \frac{18}{15}$

$x = \frac{6}{5}$

$\boxed{\text{Scale factor} = \frac{6}{5} \\ 5:6}$

3. 1:3

7 8 3 24 9

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

$\boxed{\text{Scale factor} = 3 \\ 1:3}$

4. 18

12 8 ? 12 12
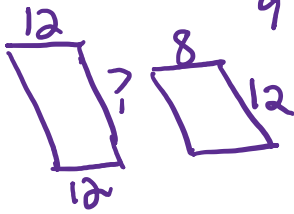
$\frac{8x}{8} = \frac{12}{8}$

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

$12\left(\frac{3}{2}\right) = ?$

$\boxed{18 = ?}$

5. 12

15 ? 15 25 25 20

$\frac{15x}{15} = \frac{25}{15}$

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

$\cancel{\left(\frac{3}{5}\right)} ? = 20\left(\frac{3}{5}\right)$

$\boxed{? = 12}$

6. 8

3 5 6 10 6 7 12 2x-2
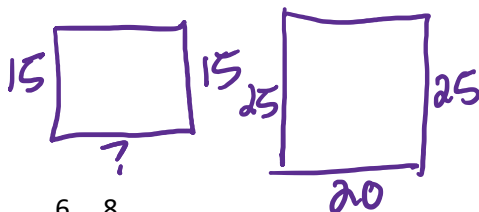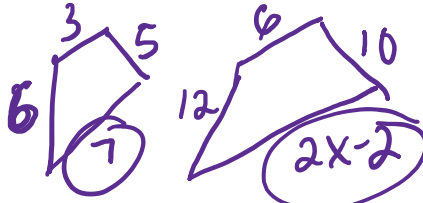
$\frac{3x}{3} = \frac{6}{3}$

$x = 2$

$7(2) = 2x - 2$
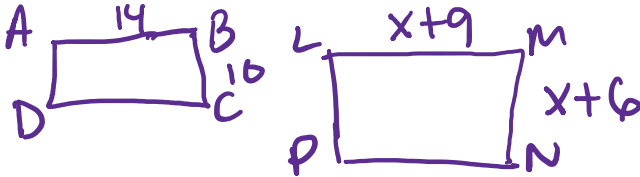$14 = 2x - 2$
$+2 \qquad +2$
$\frac{16}{2} = \frac{2x}{2}$

$\boxed{x = 8}$

7. 294/9 = 32 2/3

E D F A C
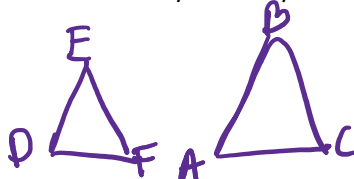
P = 42   7:9   P = ?

$P = 42\left(\frac{7}{9}\right) = \boxed{\frac{294}{9}}$

8. x = 3/2, scale factor = ¾, LM = 10.5, MN = 7.5

A ⟌14⟍ B   L ⟌x+9⟍ M

D   C   P   N
  10   x+6

$\frac{14}{x+9} \diagdown \frac{10}{x+6}$

$14(x+6) = 10(x+9)$

$14x + 84 = 10x + 90$

$-10x \qquad -10x$

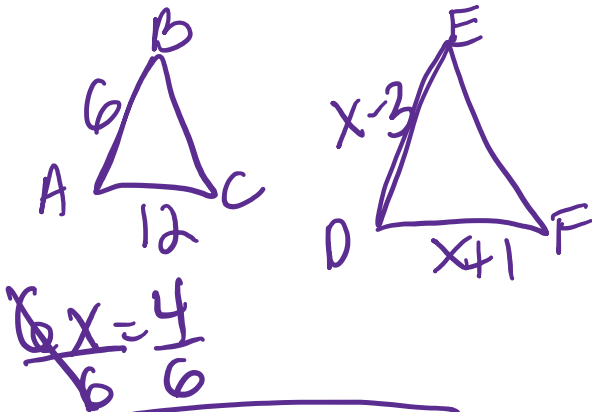$4x + 84 = 90$

$-84 \quad -84$

$\frac{4x}{4} = \frac{6}{4}$

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

$LM = \frac{3}{2} + 9 = \frac{21}{2}$

$\boxed{LM = 10.5}$

$MN = \frac{3}{2} + 6 = \frac{15}{2}$

$\boxed{MN = 7.5}$

$\frac{\cancel{14}x}{\cancel{14}} = \frac{10.5}{14}$

scale factor

$\boxed{X = 0.75 \quad \text{or } 3/4}$

9. x = 7, scale factor = 2/3, DE = 4, DF = 8

B   E

A   C   D ⟍x+1⟋ F
6   12   x-3

$\frac{6}{X-3} \diagup \frac{12}{X+1}$

$12(X-3) = 6(X+1)$

$12X - 36 = 6X + 6$

$-6X \qquad -6X$

$6X - 36 = 6$

$+36 \quad +36$

$\frac{6X}{6} = \frac{42}{6} \quad \boxed{X = 7}$

$\frac{6X}{6} = \frac{4}{6}$

$\boxed{X = \frac{2}{3}}$
Scale factor

$DE = 7 - 3$

$\boxed{DE = 4}$

$DF = 7 + 1$

$\boxed{DF = 8}$