

Chapter 7: Review of Some Topics

Solve each proportion.

1) $\frac{n}{9} = \frac{n+3}{7}$

$$7(n) = 9(n+3)$$

$$7n = 9n + 27$$

$$-2n = 27$$

$$n = -\frac{27}{2}$$

$$\boxed{n = -13\frac{1}{2}}$$

2) $\frac{3}{a} = \frac{5}{a-3}$

$$3(a-3) = 5(a)$$

$$3a - 9 = 5a$$

$$-9 = 2a$$

$$a = -\frac{9}{2}$$

$$\boxed{a = -4\frac{1}{2}}$$

3) $\frac{x-4}{x} = \frac{6}{3}$

$$3(x-4) = 6(x)$$

$$3x - 12 = 6x$$

$$-12 = 3x$$

$$\boxed{-4 = x}$$

4) $\frac{8}{v} = \frac{2}{v+3}$

$$8(v+3) = 2(v)$$

$$8v + 24 = 2v$$

$$6v = -24$$

$$\boxed{v = -4}$$

5) $\frac{x+2}{4} = \frac{x+9}{9}$

$$4(x+9) = 9(x+2)$$

$$4x + 36 = 9x + 18$$

$$18 = 5x$$

$$x = \frac{18}{5}$$

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

6) $\frac{7}{2} = \frac{k-7}{k+1}$

$$7(k+1) = 2(k-7)$$

$$7k + 7 = 2k - 14$$

$$5k = -21$$

$$k = -\frac{21}{5}$$

$$\boxed{k = -4\frac{1}{5}}$$

7) $\frac{2}{n-3} = \frac{7}{n-5}$

$$2(n-5) = 7(n-3)$$

$$2n - 10 = 7n - 21$$

$$11 = 5n$$

$$n = \frac{11}{5}$$

$$\boxed{n = 2\frac{1}{5}}$$

8) $\frac{p-10}{3} = \frac{p+8}{7}$

$$7(p-10) = 3(p+8)$$

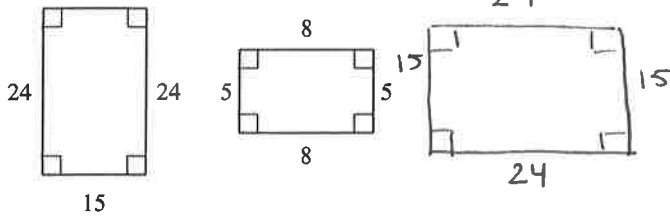
$$7p - 70 = 3p + 24$$

$$4p = 94$$

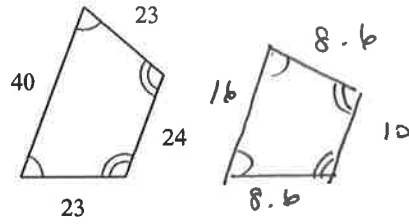
$$\boxed{p = 23\frac{1}{2}}$$

State if the polygons are similar. Explain how you know.

9) *yes, similar.*



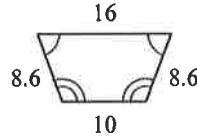
10)



a- all $\text{conv. } \angle\text{s are } \cong$

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$$b- \frac{24}{8} = \frac{15}{5} = \frac{24}{8} = \frac{15}{5}$$



$$b- \frac{40}{16} = \frac{23}{8.6} = \frac{24}{10} = \frac{23}{8.6}$$

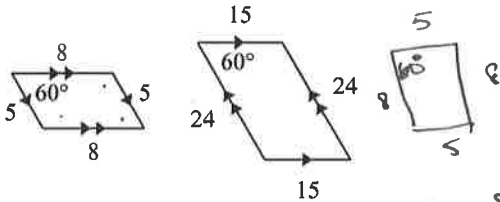
$$\frac{3}{1} = \frac{3}{1} = \frac{3}{1} = \frac{3}{1}$$

ratios of $\text{conv sides} =$

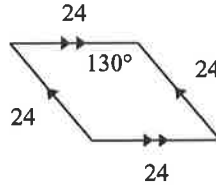
not similar;
ratios of conv sides not =

$$\frac{5}{2} \quad \frac{115}{43} \quad \frac{12}{5} \quad \frac{115}{43}$$

11)



12)



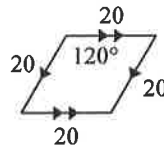
not similar;
 $\text{conv } \angle\text{s not } \cong$

a- all $\text{conv } \angle\text{s are } \cong$ *yes; similar*

$$b- \frac{15}{5} = \frac{24}{8} = \frac{15}{5} = \frac{24}{8}$$

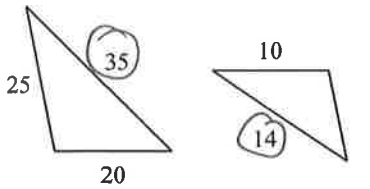
ratios of $\text{conv sides} =$

$$\frac{3}{1} = \frac{3}{1} = \frac{3}{1} = \frac{3}{1}$$



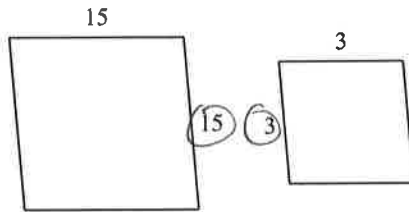
The polygons in each pair are similar. Find the scale factor of the smaller figure to the larger figure.

13)



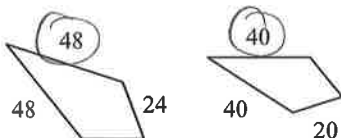
$$\frac{14}{35} \rightarrow \boxed{2:5}$$

14)



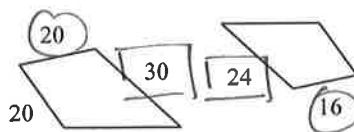
$$3:15 \rightarrow \boxed{1:5}$$

15)



$$40:48 \rightarrow \boxed{5:6}$$

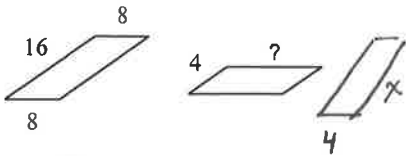
16)



$$\frac{16}{20} = \frac{24}{30} \rightarrow \boxed{4:5}$$

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

17)

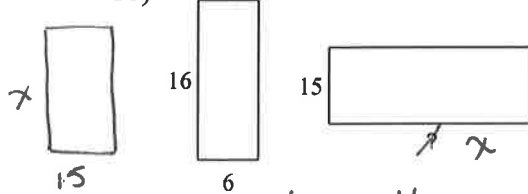


$$\frac{8}{4} = \frac{16}{?}$$

$$8(?) = 4 \cdot 16$$

$$\boxed{? = 8}$$

18)

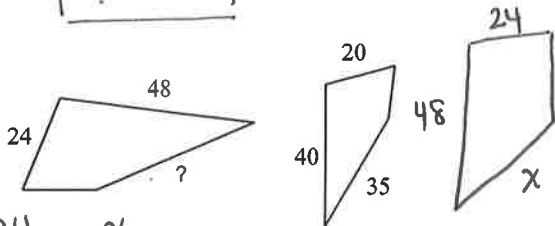


$$\frac{6}{15} = \frac{16}{x}$$

$$6x = 15(16)$$

$$\boxed{x = 40}$$

19)

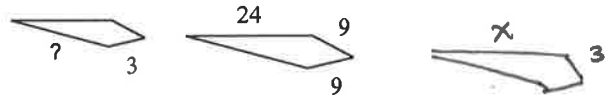


$$\frac{24}{20} = \frac{x}{35}$$

$$24(35) = 20x$$

$$\boxed{x = 42}$$

20)



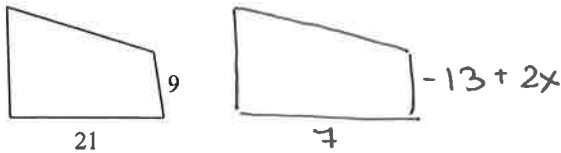
$$\frac{x}{24} = \frac{3}{9}$$

$$9x = 3(24)$$

$$\boxed{x = 8}$$

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

21)



$$\frac{21}{7} = \frac{9}{-13+2x}$$

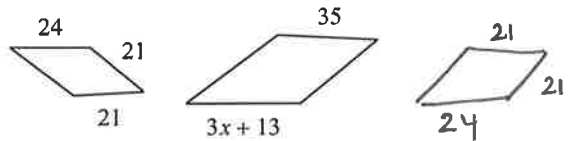
$$21(-13+2x) = 7(9)$$

$$-273 + 42x = 63$$

$$42x = 336$$

$$\boxed{x = 8}$$

22)



$$\frac{35}{21} = \frac{3x+13}{24}$$

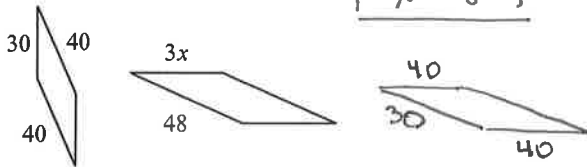
$$35(24) = 21(3x+13)$$

$$840 = 63x + 273$$

$$567 = 63x$$

$$\boxed{x = 9}$$

23)



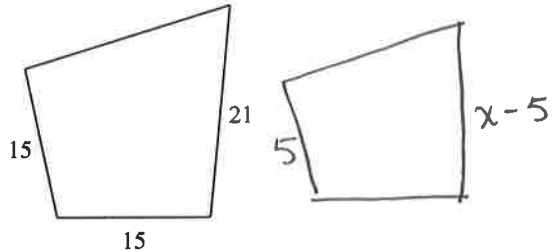
$$\frac{3x}{40} = \frac{48}{30}$$

$$3x(30) = 40(48)$$

$$90x = 1920$$

$$\boxed{x = 21 \frac{1}{3}}$$

24)



$$\frac{15}{5} = \frac{21}{x-5}$$

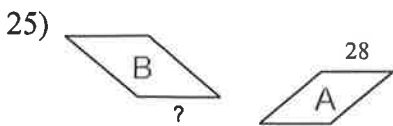
$$15(x-5) = 5(21)$$

$$15x - 75 = 105$$

$$15x = 180$$

$$\boxed{x = 12}$$

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

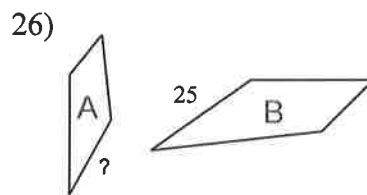


scale factor from A to B = 4 : 5

$$\frac{4}{5} = \frac{28}{x}$$

$$4x = 5(28)$$

$$x = 35$$

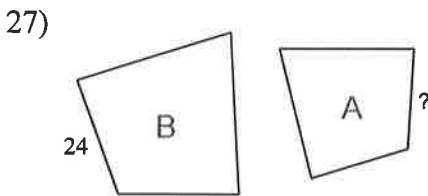


scale factor from A to B = 4 : 5

$$\frac{4}{5} = \frac{x}{25}$$

$$100 = 5x$$

$$x = 20$$

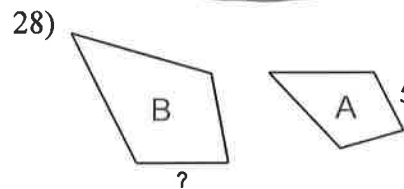


scale factor from A to B = 1 : 4

$$\frac{1}{4} = \frac{x}{24}$$

$$24 = 4x$$

$$x = 6$$

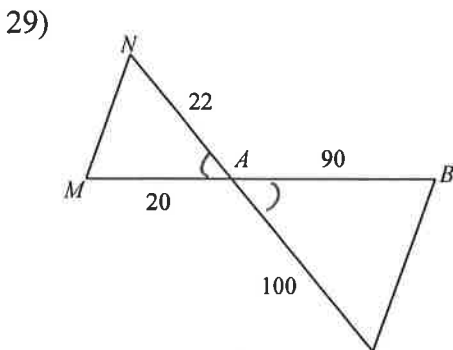


scale factor from A to B = 1 : 2

$$\frac{1}{2} = \frac{5}{x}$$

$$x = 10$$

State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.



not similar.

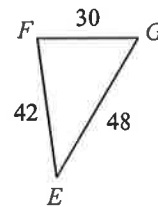
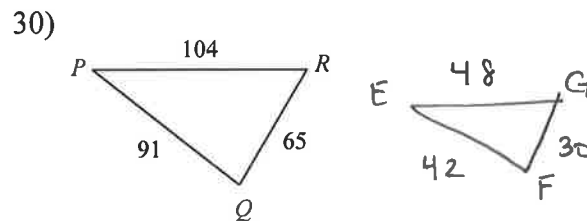
$\Delta ABC \sim$ _____

check for SAS

$$\frac{22}{100} = \frac{11}{50} \quad \frac{22}{90} = \frac{11}{45}$$

$$\frac{20}{90} = \frac{2}{9} \quad \frac{20}{100} = \frac{1}{5}$$

no no



$$\frac{104}{48} = \frac{13}{6}$$

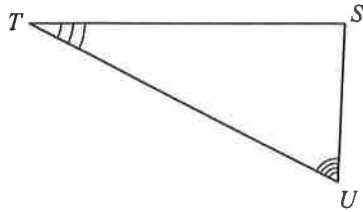
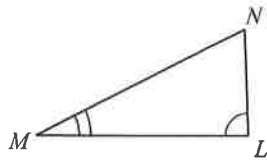
$$\frac{65}{30} = \frac{13}{6}$$

$$\frac{91}{42} = \frac{13}{6}$$

$\Delta PQR \sim \Delta EFG$

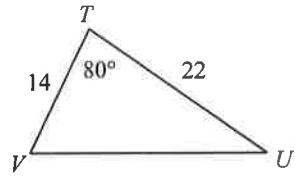
SSS Similarity
(ratios of all pairs of
corr sides are =)

31)



$\Delta STU \sim$ _____
not similar

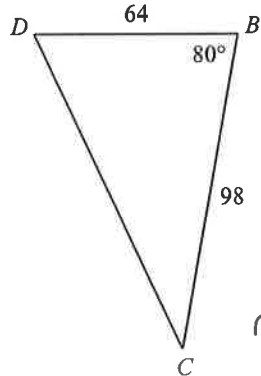
32)



SAS? (check)

$$\frac{14}{64} \quad \frac{22}{98}$$

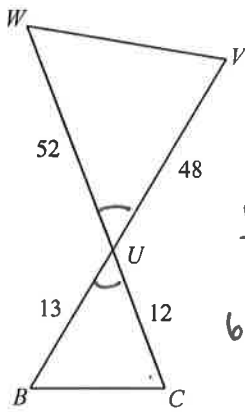
$$1372 \neq 1408$$



not similar

$\Delta DCB \sim$ _____

33)



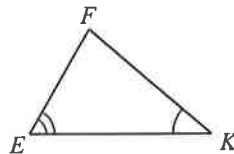
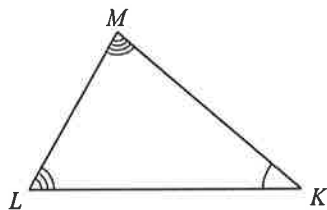
SAS? (check)

$$\frac{48}{12} \quad \frac{52}{13}$$

$$624 = 624$$

$\Delta UVW \sim \Delta UCB$
 by SAS ~

34)

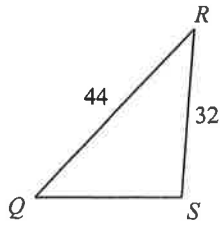


not similar

$\Delta MLC \sim$ _____

Find the missing length. The triangles in each pair are similar.

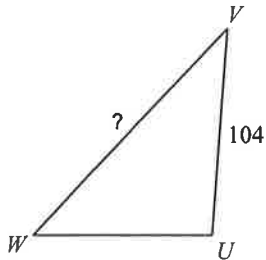
35)



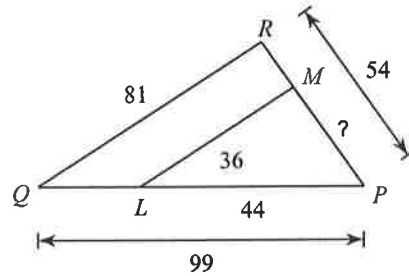
$$\frac{32}{104} = \frac{44}{x}$$

$$32x = 104(44)$$

$$\boxed{x = 143}$$



36)

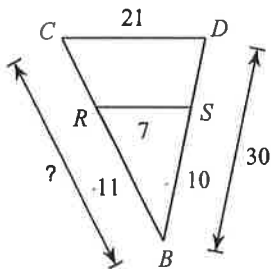


$$\frac{44}{99} = \frac{x}{54}$$

$$2376 = 99x$$

$$\boxed{x = 24}$$

37)

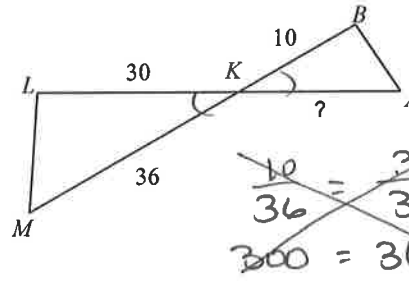


$$\frac{10}{30} = \frac{11}{x}$$

$$10x = 330$$

$$\boxed{x = 33}$$

38)



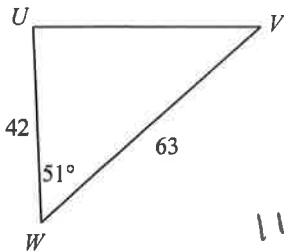
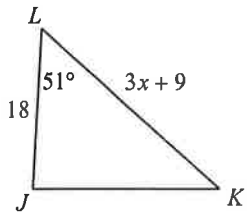
$$\frac{10}{30} = \frac{x}{36}$$

$$360 = 30x$$

$$\boxed{x = 12}$$

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

39)



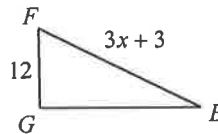
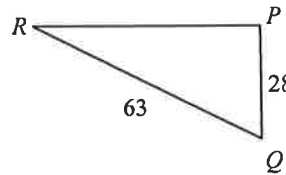
$$\frac{18}{42} = \frac{3x+9}{63}$$

$$1134 = 126x + 378$$

$$756 = 126x$$

$$\boxed{x = 6}$$

40)



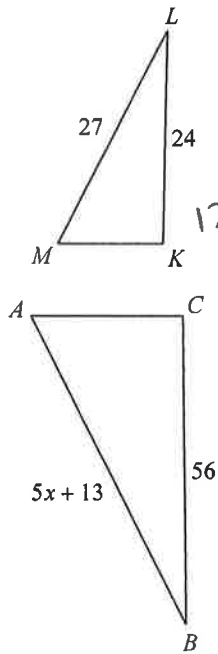
$$\frac{28}{12} = \frac{63}{3x+3}$$

$$84x + 84 = 756$$

$$84x = 672$$

$$\boxed{x = 8}$$

41)



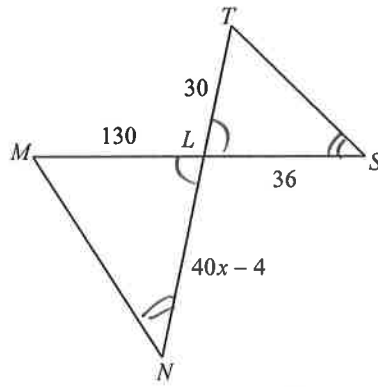
$$\frac{24}{56} = \frac{27}{5x+13}$$

$$120x + 312 = 1512$$

$$120x = 1200$$

$$\boxed{x = 10}$$

42)



$$\frac{40x-4}{36} = \frac{130}{30}$$

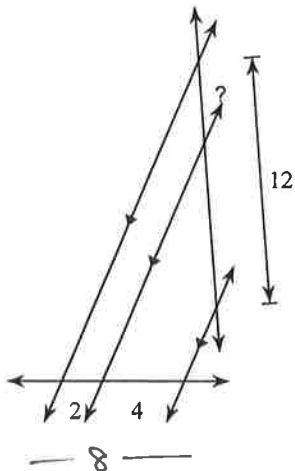
$$1200x - 120 = 4680$$

$$1200x = 4800$$

$$\boxed{x = 4}$$

Find the missing length indicated.

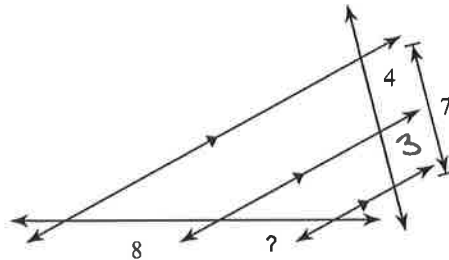
43)



$$\frac{2}{8} = \frac{x}{12}$$

$$\boxed{x = 3}$$

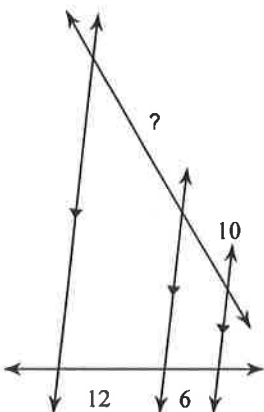
44)



$$\frac{8}{4} = \frac{x}{3}$$

$$\boxed{x = 6}$$

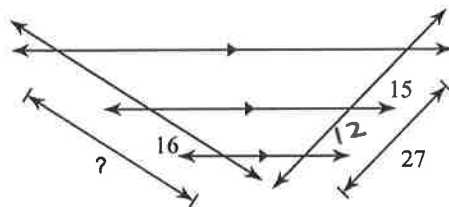
45)



$$\frac{12}{6} = \frac{x}{10}$$

$$\boxed{x = 20}$$

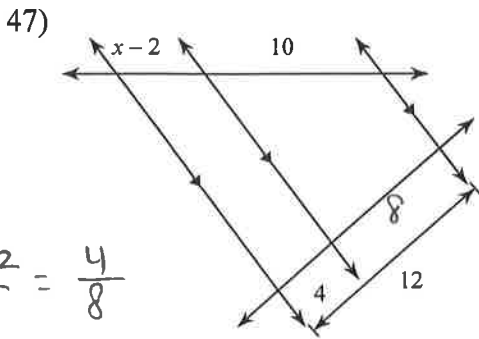
46)



$$\frac{x}{16} = \frac{27}{12}$$

$$\boxed{x = 36}$$

Solve for x.



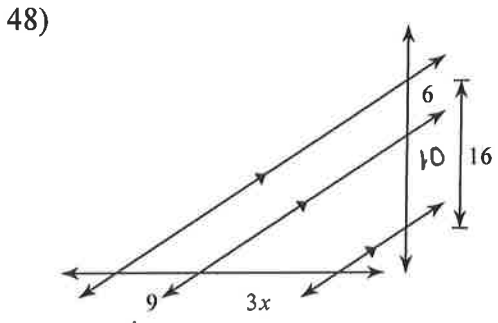
$$\frac{x-2}{10} = \frac{4}{12}$$

$$8(x-2) = 10(4)$$

$$8x - 16 = 40$$

$$8x = 56$$

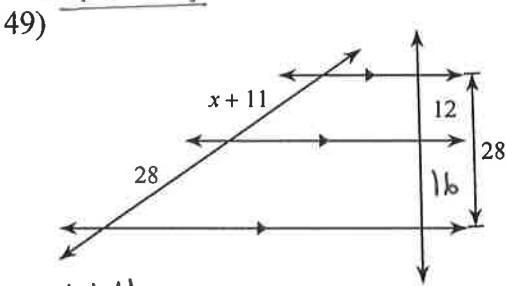
$$\boxed{x = 7}$$



$$\frac{9}{3x} = \frac{6}{10}$$

$$90 = 18x$$

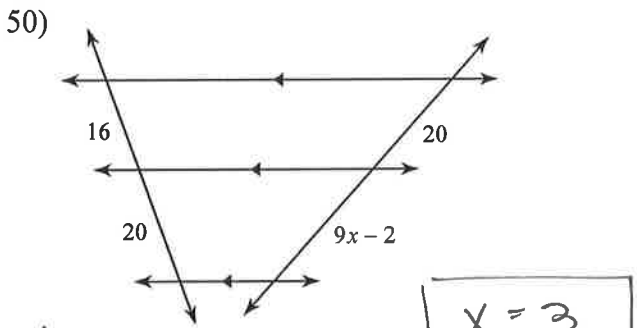
$$\boxed{x = 5}$$



$$\frac{x+11}{28} = \frac{12}{16}$$

$$16(x+11) = 336$$

$$\boxed{x = 10}$$

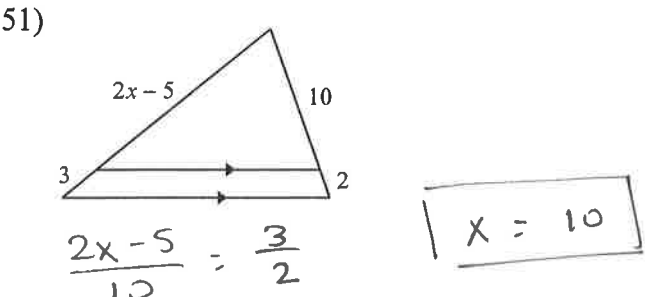


$$\frac{16}{20} = \frac{20}{9x-2}$$

$$16(9x-2) = 20(20)$$

$$144x - 32 = 400$$

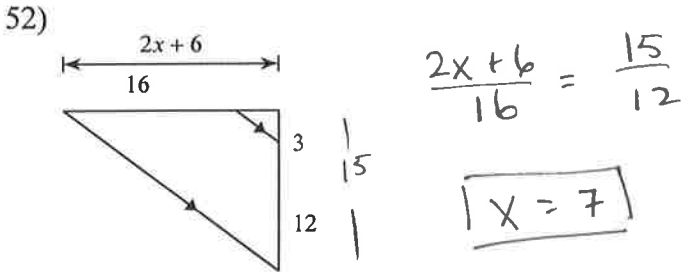
$$\boxed{x = 3}$$



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

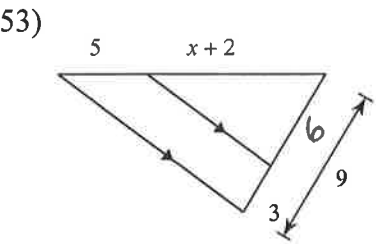
$$2(2x-5) = 10(3)$$

$$\boxed{x = 10}$$



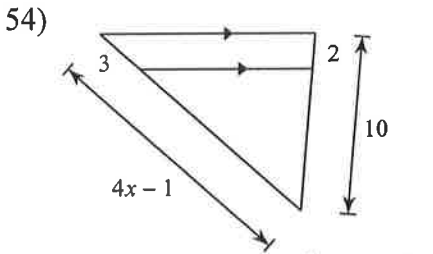
$$\frac{2x+6}{16} = \frac{15}{12}$$

$$\boxed{x = 7}$$



$$\frac{x+2}{5} = \frac{6}{9}$$

$$\boxed{x = 8}$$



$$\frac{3}{2} = \frac{4x-1}{10}$$

$$\boxed{x = 4}$$