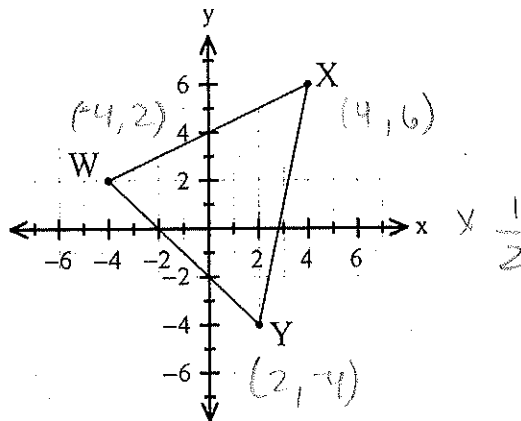


This worksheet covers content found in chapters 6, 7, and 8. 😊

#1 - 11: from Chapter 6

- 1) $\triangle WXY$, as shown in the diagram, is dilated about the origin, with a scale factor of $\frac{1}{2}$. Find the coordinates of each vertex of the image.



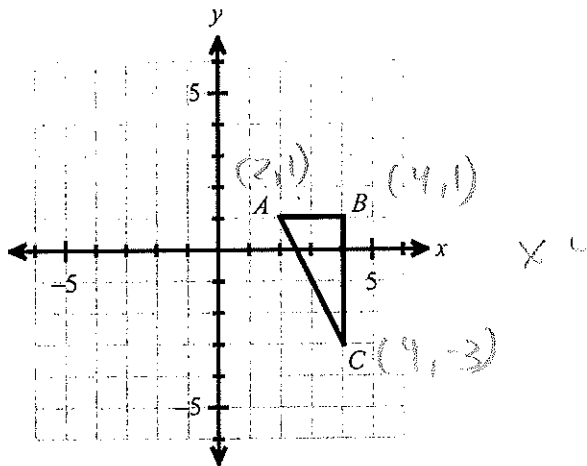
$$X' = (2, 3)$$

$$Y' = (1, -2)$$

$$W' = (-2, 1)$$

- 2) $\triangle ABC$ is dilated with a scale factor of 4 centered at the origin. What are the coordinates of the image points?

- A. $A'(8, 4), B'(16, 4), C'(16, -12)$
- B. $A'(8, 4), B'(16, 4), C'(16, 12)$
- C. $A'(0.5, 0.25), B'(1, 0.25), C'(1, -0.75)$
- D. $A'(0.5, 0.25), B'(1, 0.25), C'(1, 0.75)$

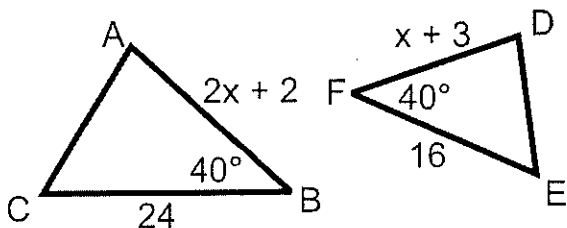


- 3) Segment AB is dilated such that $A(-3, 5)$ and $A'(-6, 10)$. If the dilation is centered at the origin, then find the scale factor of the dilation.

$$\frac{-6}{-3} \text{ or } 2$$

$$\frac{10}{5}$$

- 4) Given that $\triangle ABC \sim \triangle DFE$, find x and the length of AB .



$$\frac{AB}{DF} = \frac{BC}{FE}$$

$$\frac{2x+2}{x+3} = \frac{24}{16}$$

$$32x + 32 = 24x + 72$$

$$8x = 40$$

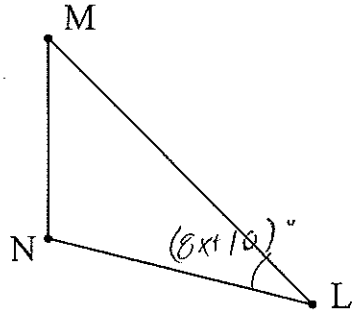
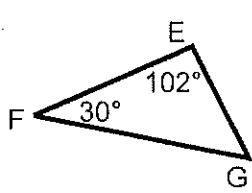
$$x = 5$$

$$AB = 2(5) + 2$$

$$= 10 + 2$$

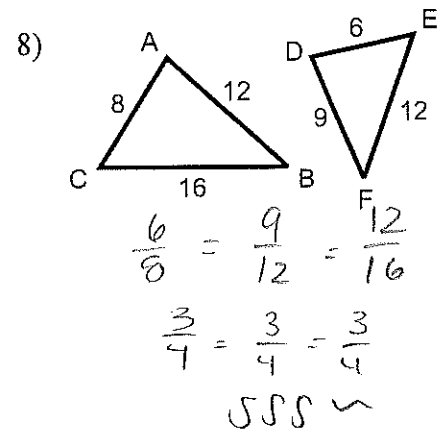
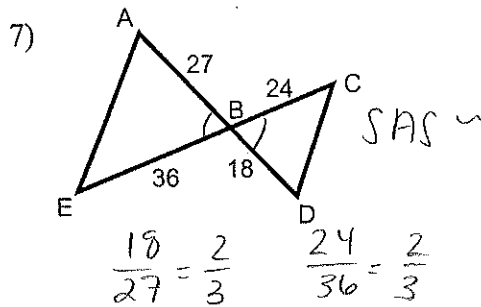
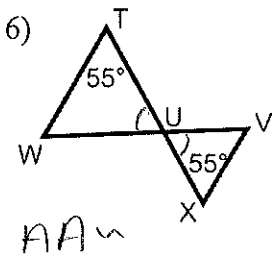
$$= 12$$

5) Given that $\triangle EFG \sim \triangle NLM$ and $\angle L = (8x + 10)^\circ$, find x .

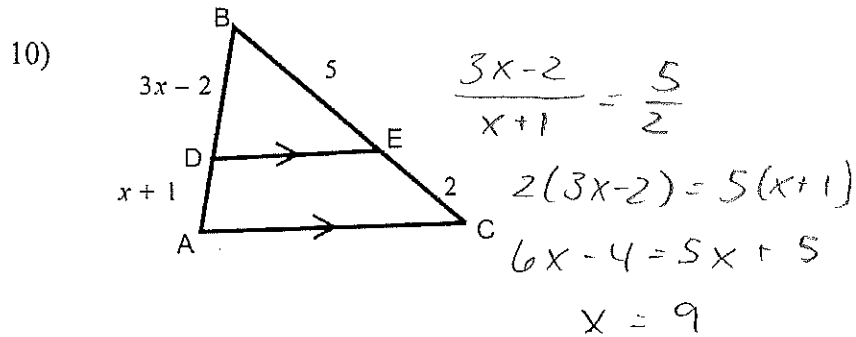
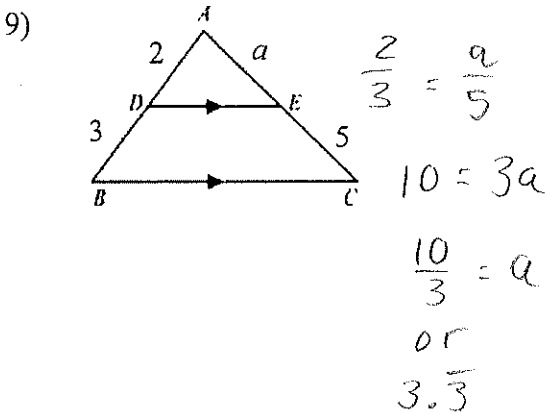


$$\begin{aligned} \angle F &= \angle L \\ 30 &= 8x + 10 \\ 20 &= 8x \\ \frac{5}{2} &= x \\ \text{or } 2.5 \end{aligned}$$

For #6 – 8, determine why the given triangles are similar, or if they are not similar. Choose from: AA~, SSS~, SAS~, or “not similar”.



For #9 – 10: Find the value of each variable.



11) Multiple choice. Given that $\triangle HKM \sim \triangle TWB$, which statement(s) below are true? Select all that apply.

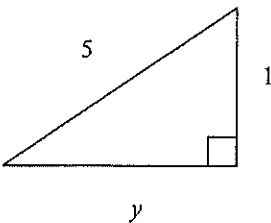
- A) $\frac{HK}{TW} = \frac{WB}{KM}$ B) $\frac{HM}{TB} = \frac{KM}{WB}$ C) $\angle H \cong \angle T$ D) $\angle M \cong \angle W$

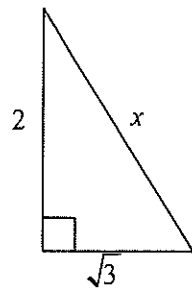
$$\frac{HK}{TW} = \frac{KM}{WB} = \frac{HM}{TB}$$

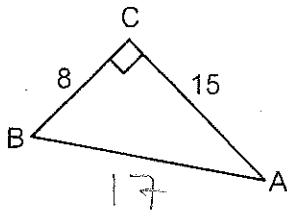
$$\begin{aligned} \angle H &= \angle T \\ \angle K &= \angle W \\ \angle M &= \angle B \end{aligned}$$

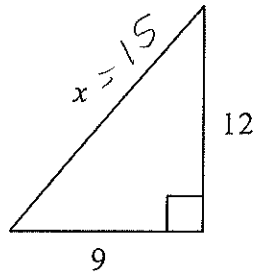
12 - 27: from Chapter 7

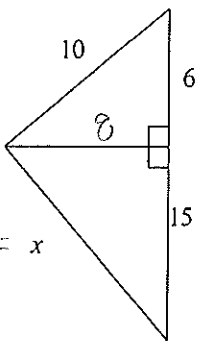
For #12 - 19: Find the variable(s). Write your answer as a simplified radical, if needed.

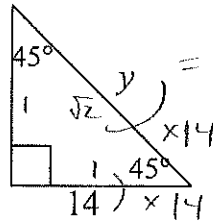
12)  $1^2 + y^2 = 5^2$
 $1 + y^2 = 25$
 $y^2 = 24$
 $y = 2\sqrt{6}$


13)  $2^2 + (\sqrt{3})^2 = x^2$
 $4 + 3 = x^2$
 $\sqrt{7} = \sqrt{x^2}$
 $\sqrt{7} = x$

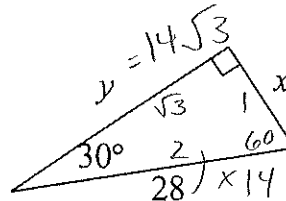
14)  $8-15-17$

15)  $9-12-15$

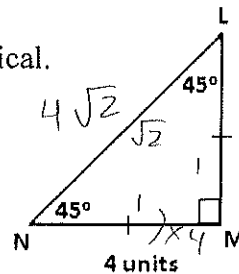
16)  $6-8-10$
 $8-15-17$
 $17 = x$

17)  $y = 14\sqrt{2}$
 $14 = x$

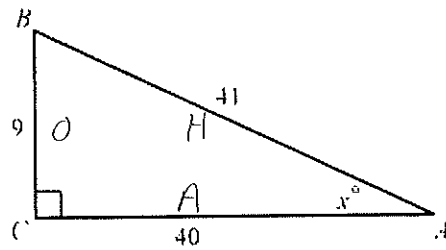
18)  $20 = z$
 $w = 10\sqrt{3}$

19)  $y = 14\sqrt{3}$
 $x = 14$

20) Find LN in the triangle shown. Write your answer as a simplified radical.



For #21 – 22, use the triangle shown to the right.



21) What fraction is $\tan A$?

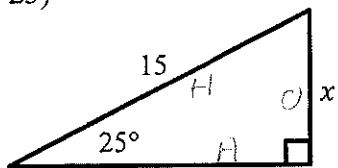
$$\tan \angle A = \frac{O}{A} \quad \tan \angle A = \frac{9}{40}$$

22) What fraction is $\cos A$?

$$\cos \angle A = \frac{A}{H} = \frac{40}{41}$$

For #23 – 26, find the missing variable. Round to one decimal place.

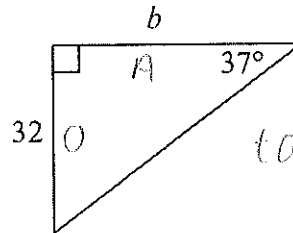
23)



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

$$6.3 \approx x$$

24)



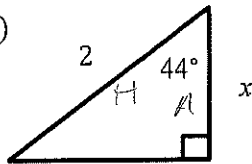
$$\tan 37 = \frac{32}{b}$$

$$b \cdot \tan 37 = 32 \cdot 1$$

$$\frac{b \cdot \tan 37}{\tan 37} = \frac{32 \cdot 1}{\tan 37}$$

$$b \approx 42.5$$

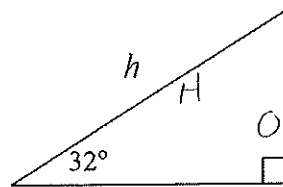
25)



$$2 \cdot \cos 44 = \frac{x}{2} \cdot 2$$

$$1.4 \approx x$$

26)



$$h \cdot \sin 32 = \frac{5}{h} \cdot h$$

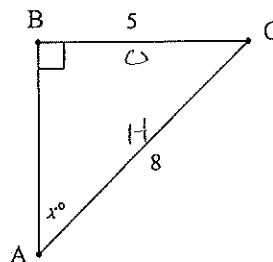
$$\frac{h \sin 32}{\sin 32} = \frac{5}{\sin 32}$$

$$h = 9.4$$

27) Given the diagram shown, find the measure of $\angle A$. If needed, round to one decimal place.

$$\sin^{-1}(\sin x) = \sin^{-1}\left(\frac{5}{8}\right)$$

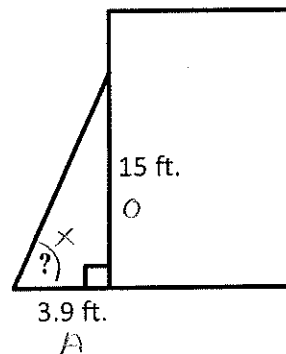
$$x \approx 38.7^\circ$$



28) A ladder leans against a wall and reaches a point 15 feet up the wall. The base of the ladder is 3.9 feet from the wall. What angle does the ladder make with the wall and with the ground? Round to one decimal place.

$$\tan^{-1}(\tan x) = \tan^{-1}\left(\frac{15}{3.9}\right)$$

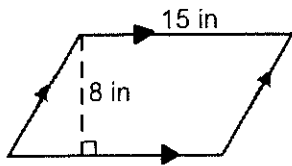
$$x \approx 75.4^\circ$$



#29 - 34: from Chapter 8

For #29 - 32, find the area of each shape.

29)

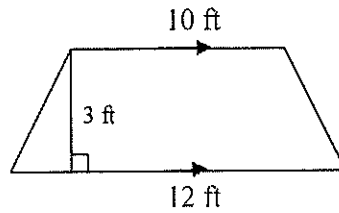


$$A = b \cdot h$$

$$A = 8 \cdot 15$$

$$A = 120 \text{ in}^2$$

30)

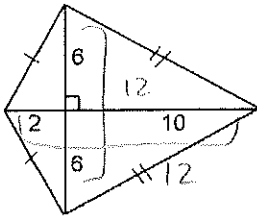


$$A = \frac{1}{2} (b_1 + b_2) \cdot h$$

$$A = \frac{1}{2} (10 + 12) \cdot 3$$

$$A = 33 \text{ ft}^2$$

31)

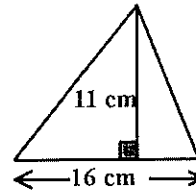


$$A = \frac{1}{2} (d_1 \cdot d_2)$$

$$A = \frac{1}{2} (12 \cdot 10)$$

$$A = 72$$

32)



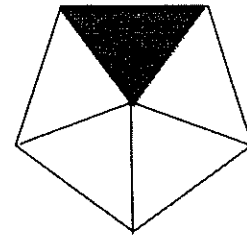
$$A = \frac{1}{2} b \cdot h$$

$$A = \frac{1}{2} (16)(11)$$

$$A = 88 \text{ cm}^2$$

33) If the area of the shaded region is 24.8 in^2 , then find the area of the regular pentagon shown.

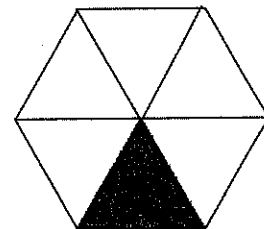
$$24.8 \cdot 5 = 124 \text{ in}^2$$



5 triangles

34) If the area of the shaded region is 14.7 m^2 , then find the area of the regular hexagon shown.

$$6 \cdot 14.7 = 88.2 \text{ m}^2$$



6 triangles

Handwritten mark or signature at the top left corner.