

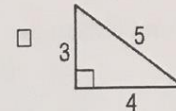
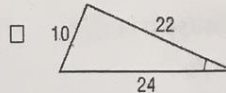
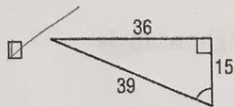
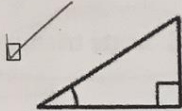
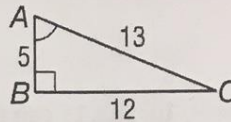
Name KEY

Date \_\_\_\_\_ Period \_\_\_\_\_

Geometry w/ Trig

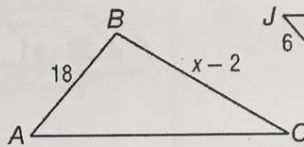
**Quarterly 3 Exam Review**

1. Which triangle(s) are similar to  $\triangle ABC$ ? Select all that apply.



**Multiple Choice:** For #2 - 10, choose one correct answer.

2. Find the value of  $x$  if  $\triangle ABC \sim \triangle JKL$ .



$$\frac{18}{x-2} = \frac{6}{9}$$

$$162 = 6x - 12$$

$$174 = 6x$$

$$x = 29$$

- a. 10      b. 25      c. 14      d. 29

3. Given  $ABCD \sim PQRS$ ,  $AB = 10$ ,  $BC = 6$ ,  $PS = 12$  and  $QR = 4$ , find the scale factor from  $ABCD$  to  $PQRS$ . Draw a diagram!

- a.  $\frac{1}{2}$       b.  $\frac{3}{2}$       c.  $\frac{5}{3}$       d.  $\frac{5}{6}$

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

4. The measures of the angles of a triangle are in the extended ratio of 5 : 5 : 8. Find the measure of the **largest** angle.

- a.  $10^\circ$       b.  $50^\circ$       c.  $80^\circ$       d.  $180^\circ$

$$5x + 5x + 8x = 180$$

$$18x = 180$$

$$x = 10$$

5. The measures of the angles of a triangle are in the extended ratio of 5 : 5 : 8. Classify the triangle by **angles and sides**.

- a. Right Scalene      b. Acute Isosceles      c. Right Isosceles      d. Acute Scalene

$$50, 50, 80$$

Determine if the numbers 12, 14, and 28 can represent the side lengths of a triangle. If yes, classify the triangle.

- a. obtuse triangle      b. right triangle      c. acute triangle      d. not a triangle

$$12 + 14 < 28$$

$$28 > 28$$

7.  $EFGH$  and  $STUV$  are similar. The ratio of corresponding sides is 7 : 12. What is the ratio of perimeters of  $EFGH$  to  $STUV$ ?

a. 7 : 12

b. 49 : 144

c. 12 : 7

d. 14 : 24

8. Determine if the numbers 9, 10, and 11 can represent the side lengths of a triangle. If yes, classify the triangle

a. not a triangle

b. Obtuse triangle

c. right triangle

d. acute triangle

$$9+10 > 11$$

$$19 > 11 \checkmark$$

$$11^2 \stackrel{?}{=} 9^2 + 10^2$$

$$121 \stackrel{?}{=} 181$$

$$121 < 181$$

9.  $EFGH$  and  $STUV$  are similar. The ratio of corresponding sides is 5 : 9. What is the ratio of areas of  $EFGH$  to  $STUV$ ?

a. 5 : 9

b. 10 : 18

c. 25 : 81

d. 81 : 25

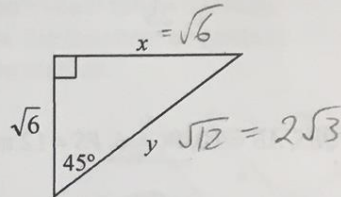
10. Solve for  $x$  and  $y$ . Leave your answers in simplest radical form.

a.  $x = 3\sqrt{2}, y = \sqrt{6}$

b.  $x = \sqrt{6}, y = 2\sqrt{3}$

c.  $x = \sqrt{6}, y = \sqrt{18}$

d.  $x = \sqrt{2}, y = \sqrt{6}$

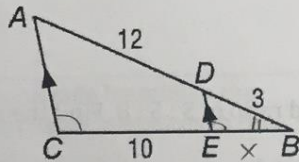


11. In  $\triangle ABC$ ,  $\overline{DE} \parallel \overline{AC}$ . Find  $BE$ .

$$\frac{3}{12} = \frac{x}{10}$$

$$30 = 12x$$

$$x = 2.5$$

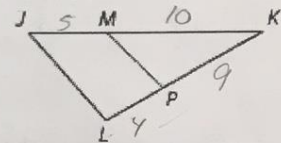


12. In  $\triangle JKL$ ,  $JK = 15$ ,  $JM = 5$ ,  $LK = 13$ , and  $PK = 9$ . Determine if  $\overline{JL} \parallel \overline{MP}$ .

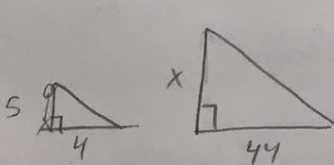
$$\frac{10}{5} \stackrel{?}{=} \frac{9}{4}$$

$$40 \neq 45$$

Not parallel



13. A five foot tall student casts a shadow that is 4 feet long. If the tree next to her casts a 44 foot shadow, how tall is the tree? Draw a diagram!

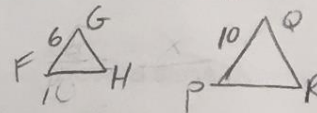


$$\frac{5}{x} = \frac{4}{44}$$

$$220 = 4x$$

$$x = 55 \text{ ft}$$

14. Given that  $\triangle FGH \sim \triangle PQR$ ,  $FG = 6$ ,  $PQ = 10$ , and the perimeter of  $\triangle PQR$  is 35, what is the perimeter of  $\triangle FGH$ ? Draw a diagram!



$$\frac{6}{10} = \frac{x}{35}$$

$$210 = 10x$$

$$x = 21$$



15. Find the value of  $x$ . Leave your answer in simplest radical form.

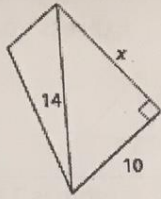
$$10^2 + x^2 = 14^2$$

$$100 + x^2 = 196$$

$$x^2 = 96$$

$$x = \sqrt{96} = 4\sqrt{6}$$

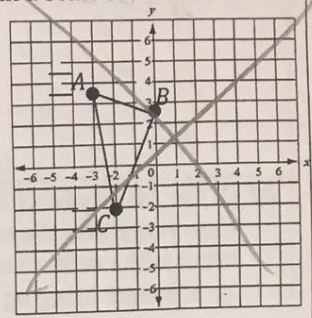
$$x = \underline{4\sqrt{6}}$$



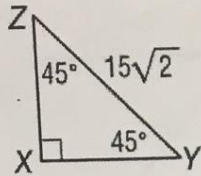
16. What are the endpoints of  $\triangle ABC$  under a dilation centered at the origin with a scale factor of 2:1?

Sorry, diagram did not print clearly

A': \_\_\_\_\_  
 B': \_\_\_\_\_  
 C': \_\_\_\_\_

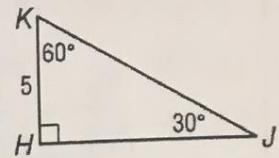


17. Find  $XZ$  and  $XY$  in  $\triangle XYZ$ .



$$XZ = \underline{15} \quad XY = \underline{15}$$

18. Find  $HJ$  and  $JK$  in  $\triangle HJK$ .



$$HJ = \underline{5\sqrt{3}} \quad JK = \underline{10}$$

19. The measures of the angles of a quadrilateral are in the extended ratio of 1:2:3:4. Find the measure of each angle.

$$1x + 2x + 3x + 4x = 360$$

$$10x = 360$$

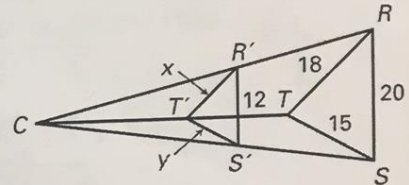
$$x = 36$$

$$1(36) = 36^\circ \quad 3(36) = 108^\circ$$

$$2(36) = 72^\circ \quad 4(36) = 144^\circ$$

20. Given the dilation below, find the scale factor and solve for the value of  $x$ .

$$k = \frac{12}{20} = \frac{3}{5}$$



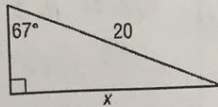
Scale Factor:  $\frac{3}{5}$

$$\frac{12}{20} = \frac{x}{18} \quad x = 10.8$$

$$216 = 20x$$

21. Find the value of  $x$  to the nearest hundredth.

$$\sin(67^\circ) = \frac{x}{20}$$



$$20 \sin(67^\circ) = x$$

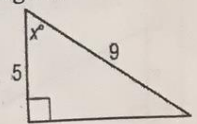
$$x \approx \underline{18.4}$$

22. Find the value of  $x$  to the nearest degree.

$$\cos x = \frac{5}{9}$$

$$\cos^{-1}\left(\frac{5}{9}\right) = x$$

$$x \approx 56.3 \approx \underline{56^\circ}$$



23. A movie theater typically makes \$455 a movie if 35 people attend. How many people attended the movie if they made \$820?

$$\frac{35}{455} = \frac{x}{820}$$

$$28700 = 455x$$

$$x = 63.08 \approx \underline{63 \text{ people}}$$

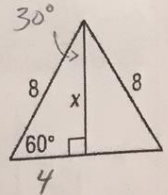
24. Find the area of the **equilateral triangle**. Leave your answer in radical form.

$$x = 4\sqrt{3}$$

$$A = \frac{1}{2}(8)(4\sqrt{3})$$

$$A = \frac{1}{2}(32\sqrt{3})$$

$$A = \underline{16\sqrt{3} \text{ units}^2}$$

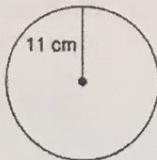


25. Find the area of the circle below.

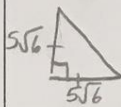
$$A = \pi r^2$$

$$A = \pi (11)^2$$

$$A = 121\pi \text{ cm}^2$$



26. The length of a leg of a **right isosceles** triangle is  $5\sqrt{6}$  inches. What is the length of the hypotenuse? Express your answer in simplest radical form



$$(5\sqrt{6})^2 + (5\sqrt{6})^2 = c^2 \quad c = \sqrt{300}$$

$$150 + 150 = c^2 \quad c = 10\sqrt{3} \text{ in}$$

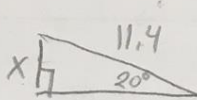
$$300 = c^2$$

27. Of the 240 students eating lunch, 96 purchased their lunch and the rest brought a bag lunch. What is the ratio of students purchasing lunch to students bringing a bag lunch?

$$\text{bag} = 240 - 96 = 144$$

$$\frac{96}{144} = \frac{2}{3}$$

28. A ramp is 11.4 meters long and has an angle of elevation of  $20^\circ$  from the ground. How high does the ramp rise? Round to the nearest tenth.



$$\sin(20) = \frac{x}{11.4}$$

$$11.4 \sin(20) = x$$

$$x \approx 3.9 \text{ m}$$

29. The ratio of the areas of two similar quadrilaterals is 121 : 49. The smaller quadrilateral has side lengths of 5, 4, 7, and 6. What is the length of the **longest side** of the second quadrilateral?

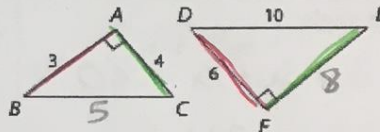
$$\frac{121}{49} \rightarrow \frac{11}{7}$$

$$\frac{11}{7} = \frac{x}{7}$$

$$77 = 7x$$

$$x = 11$$

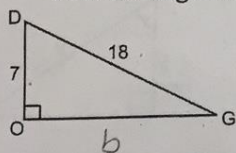
30. Determine if the two triangles are similar. If so, state the theorem or postulate that proves them similar.



$$\frac{3}{6} = \frac{1}{2} \quad \frac{4}{8} = \frac{1}{2} \quad \angle A \cong \angle F$$

Yes, SAS (2 proportional sides & included  $\angle$ )

31. Solve the triangle. Round side lengths to the nearest hundredth and angle measures to the nearest degree.



$$7^2 + b^2 = 18^2$$

$$49 + b^2 = 324$$

$$b^2 = 275$$

$$b = \sqrt{275}$$

$$b = 16.58$$

$$\sin^{-1}\left(\frac{7}{18}\right) = \angle G$$

$$m\angle G = 22.9 \approx 23^\circ$$

$$OG \approx 16.58 \quad m\angle D \approx 67^\circ \quad m\angle G \approx 23^\circ$$

32. Determine if 6,  $8\sqrt{2}$ , and 13 can form a triangle. If so, classify the triangle as right, obtuse or acute.

$$8\sqrt{2} \approx 11.3$$

$$6 + 8\sqrt{2} > 13$$

$$17.31 > 13 \checkmark$$

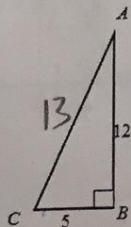
$$13^2 \square 6^2 + (8\sqrt{2})^2$$

$$169 \square 36 + 128$$

$$169 > 164$$

Obtuse

33. Use the diagram to fill in the blanks. **DO NOT SOLVE!**



a)  $\tan^{-1}\left(\frac{12}{5}\right) = m\angle C$

b)  $\tan^{-1}\left(\frac{5}{12}\right) = m\angle A$

c)  $m\angle C = \cos^{-1}\left(\frac{5}{13}\right)$

d)  $\sin C = \frac{12}{13}$

e)  $\cos A = \frac{12}{13}$

f)  $\sin A = \frac{5}{13}$