

Benchmark Test
10 min

HW Tracker due Friday...

4th hour - Finish FR Practice Test

Use the following information to answer questions 10-15.

If a football is kicked straight upward, then the height $h(t)$ of the football (in feet) at time t (in seconds) is given by

$$h(t) = -16t^2 + 64t + 10.$$

10. What is the height of the football 4 seconds after it is kicked?

10 ft

11. How long does it take for the football to return to earth (round to the nearest hundredth)?

4.15 sec

12. How long does it take to reach the maximum height?

2 sec

13. What is the maximum height?

74 feet

14. What is the real world domain of the function?

15. What is the real world range of the function?

Use the chart to answer questions 16-19. Write answers as reduced fractions.

(H = Drinks Hot Chocolate, C = Drinks Cider, H' = Doesn't Drink Hot Chocolate, C' = Doesn't Drink Cider)

	Drinks Hot Chocolate	Doesn't Drink Hot Chocolate	Total
Drinks Cider	246	51	297
Doesn't Drink Cider	88	15	103
Total	334	66	400

16. What is the probability of choosing someone that drinks hot chocolate? $P(H)$

17. What is the probability of choosing someone that doesn't drink either? $P(H' \cap C')$

18. What is the probability of choosing someone that drinks cider given they drink hot chocolate? $P(C|H)$

19. What is the probability of choosing someone that drinks hot chocolate or cider? $P(H \cup C)$

20 minutes, then go over

Name: _____

Math 2C Practice Final – Multiple Choice

_____ 1. Simplify $3x^{\frac{1}{2}} \cdot 2x^{\frac{3}{2}} \cdot 2x^0$

- a. $2x^2$
- b. $2x^4$
- c. $12x^2$
- d. $3x^{\frac{3}{2}}$

_____ 2. Simplify $\sqrt{-20}$

- a. $2i\sqrt{5}$
- b. $10i$
- c. $-5\sqrt{2}$
- d. $2\sqrt{5}$

_____ 3. Simplify $(3x^4 - 2) - (4 + 5x^2 - x^4)$

- a. $-4x^4 - 5x^2 + 2$
- b. $-4x^4 - 5x^2 - 6$
- c. $-4x^4 - 10x^2 + 2$
- d. $4x^4 - 5x^2 - 6$

_____ 4. Simplify $(2r - 1)^2$

- a. $4r^2 - 4r + 1$
- b. $8r^2 - 8$
- c. $4r^2 + 1$
- d. $8r^2 - 16r + 8$

_____ 5. Factor $16n^2 - 9$

- a. $(4n - 3)^2$
- b. $(4n + 3)(4n - 3)$
- c. $(-4n + 3)(4n - 3)$
- d. $(4n + 1)^2$

_____ 6. Factor $2n^2 + 11n - 21$

- a. $(2n + 7)(n - 3)$
- b. $(2n + 3)(n - 7)$
- c. $(2n - 3)(n - 7)$
- d. $(2n - 3)(n + 7)$

___ 7. Find the x-intercepts $x^2 + 14x + 48 = 0$

- a. $\{7, -3\}$
- b. $\{-6, -8\}$
- c. $\{6, 4\}$
- d. $\{7, 6\}$

___ 8. Solve $p^2 + 4 = 20$

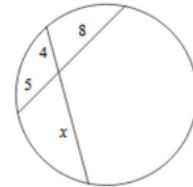
- a. $\{2\sqrt{6}, -2\sqrt{6}\}$
- b. $\{4\}$
- c. $\{4, -4\}$
- d. $\{10, -10\}$

___ 9. Solve $6v^2 + 7v - 2 = 0$

- a. $\left\{ \frac{-7 + \sqrt{97}}{12}, \frac{-7 - \sqrt{97}}{12} \right\}$
- b. $\left\{ \frac{7 + \sqrt{97}}{12}, \frac{7 - \sqrt{97}}{12} \right\}$
- c. $\left\{ \frac{2}{3}, \frac{1}{2} \right\}$
- d. $\left\{ -\frac{1}{2}, -\frac{2}{3} \right\}$

___ 10. Solve for x

- a. 8
- b. 11
- c. 9
- d. 10

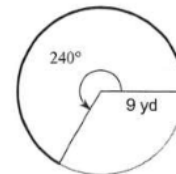


___ 11. Given $g(n) = n^3 + 2n^2$ find $g(-6)$

- a. 45
- b. 1
- c. 16
- d. -144

___ 12. Find the length of the arc.

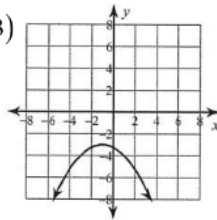
- a. 169.6 yd
- b. 26.2 yd
- c. 37.7 yd
- d. 538.8 yd



13. Identify the vertex, axis of symmetry, and min/max value of $y = -\frac{1}{4}(x-3)^2 + 1$.

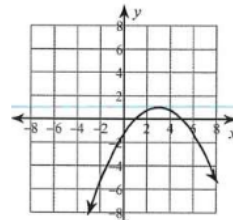
a.

Vertex: $(-1, -3)$
 Axis: $x = -1$
 Max: -3



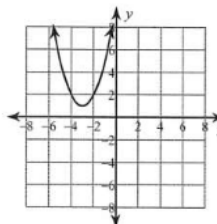
b.

Vertex: $(3, 1)$
 Axis: $x = 3$
 Max: 1



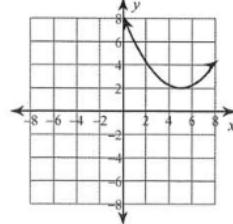
c.

Vertex: $(-3, 1)$
 Axis: $x = -3$
 Max: 1



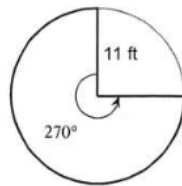
d.

Vertex: $(5, 2)$
 Axis: $x = 5$
 Max: 2



14. Find the area of the sector.

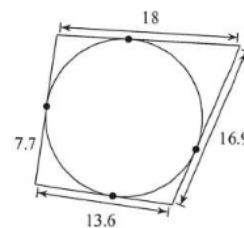
- a. 8.4 ft^2
- b. 285.1 ft^2
- c. 102635.8 ft^2
- d. 167.6 ft^2



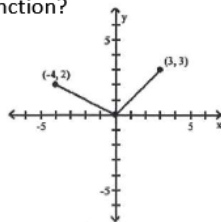
15. Find the perimeter of the polygon.

Assume that lines which appear to be tangent are tangent.

- a. 45.3
- b. 44.8
- c. 63.2
- d. 39.7



16. The graph represents which piece-wise function?



- a. $f(x) = \begin{cases} -\frac{1}{2}x & \text{if } -4 < x < 0 \\ x & \text{if } 0 < x < 3 \end{cases}$
- b. $f(x) = \begin{cases} -2x & \text{if } -4 \leq x \leq 0 \\ x & \text{if } 0 < x \leq 3 \end{cases}$
- c. $f(x) = \begin{cases} -\frac{1}{2}x & \text{if } -4 \leq x \leq 0 \\ x & \text{if } 0 < x \leq 3 \end{cases}$
- d. $f(x) = \begin{cases} \frac{1}{2}x & \text{if } -4 < x < 0 \\ x & \text{if } 0 < x < 3 \end{cases}$

17. Find $p(F|C)$.

	Friend	Not Friend	Total
Class	74		
No Class		1005	
Total	120		1400

- a. 0.21
- b. 0.05
- c. 0.62
- d. 0.27

A gumball machine contains 5 pink gumballs, 10 yellow gumballs, and 7 blue gumballs. Find the probability of randomly selecting the following:

___18. A yellow gumball

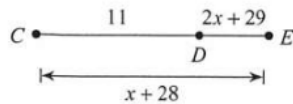
- a. $\frac{5}{11}$
- b. $\frac{5}{22}$
- c. $\frac{7}{22}$
- d. $\frac{10}{11}$

___19. A blue gumball and then a pink gumball without replacement.

- a. $\frac{35}{43}$
- b. $\frac{5}{66}$
- c. $\frac{4}{7}$
- d. $\frac{35}{484}$

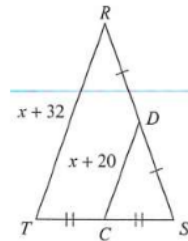
___20. Find a value for x that would prove the segment addition postulate.

- a. -11
- b. 1
- c. 5
- d. -12



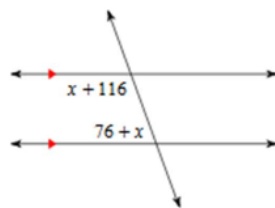
___21. Solve for x.

- a. -8
- b. -6
- c. 11
- d. -10



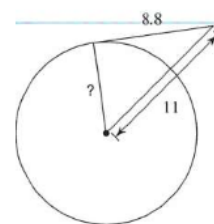
___22. State the value for x that proves lines u and v are parallel.

- a. 40
- b. 6
- c. 14
- d. -6



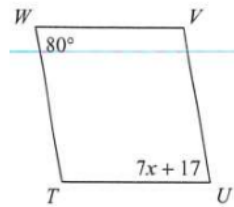
___23. Find the indicated segment length. Assume that lines which appear to be tangent are tangent.

- a. 43.6
- b. 14.1
- c. 6.6
- d. 4.4



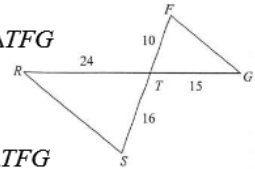
___24. Given a parallelogram, solve for x .

- a. 10
- b. 1
- c. 3
- d. 9



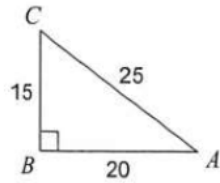
___25. State if the triangles are similar. If so, state how you know they are similar and complete the similarity statement $\triangle TSR \sim$ ___

- a. similar; SAS similarity; $\triangle TFG$
- b. not similar
- c. similar; AA similarity; $\triangle TFG$
- d. similar; SSS similarity; $\triangle TFG$



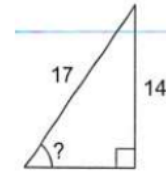
___26. Find the value of the trigonometric ratio $\tan C$.

- a. $\frac{5}{3}$
- b. $\frac{4}{3}$
- c. $\frac{3}{4}$
- d. $\frac{4}{5}$



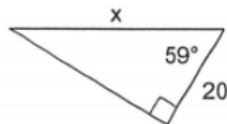
___27. Find the measure of the indicated angle to the nearest degree.

- a. 55°
- b. 35°
- c. 33°
- d. 51°



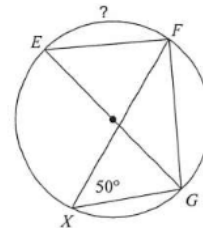
___28. Find the missing side. Round to the nearest tenth.

- a. 38.8
- b. 23.3
- c. 21.2
- d. 10.3



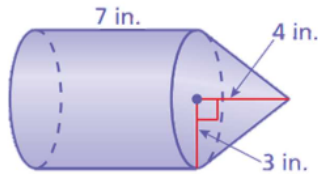
___29. Find the measure of the indicated arc.

- a. 98°
- b. 64°
- c. 80°
- d. 113°



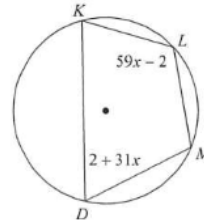
___30. Find the volume. Round to the nearest hundredth, if necessary.

- a. 254.47 in^3
- b. 58.90 in^3
- c. 311.02 in^3
- d. 235.62 in^3

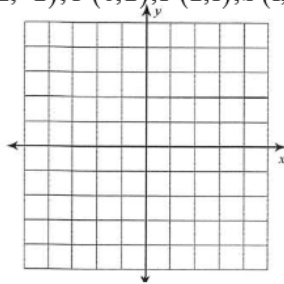


___31. Find $m\angle KDM$

- a. 57°
- b. 70°
- c. 95°
- d. 64°



___32. Graph the points $V(-2,-2), U(0,2), T(2,1), S(1,-2)$, then dilate the figure by 1.5



a.

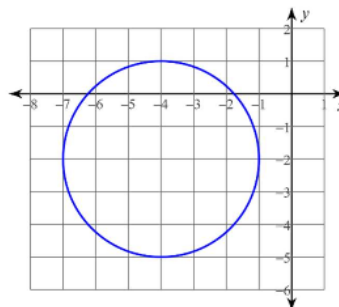
b.

c.

d.

___33. What is the equation of the circle shown to the right. Use the information provided to write the equation of the circle.

- a. $(x - 4)^2 + (y - 2)^2 = 9$
- b. $(x + 4)^2 + (y + 2)^2 = 9$
- c. $(x + 4)^2 + (y + 2)^2 = 3$
- d. $(x - 4)^2 + (y - 2)^2 = 6$



Go over Multiple Choice Practice Final

_____ 1. Simplify $3x^{\frac{1}{2}} \cdot 2x^{\frac{3}{2}} \cdot 2x^0$

a. $2x^2$

b. $2x^4$

c. $12x^2$

d. $3x^{\frac{3}{2}}$

$$x^{\frac{1}{2} + \frac{3}{2} + 0} = x^{\frac{4}{2}} = x^2$$

_____ 2. Simplify $\sqrt{-20}$ $2i\sqrt{5}$

a. $2i\sqrt{5}$ $\begin{matrix} \wedge \\ 5 \times \\ \triangle \\ \textcircled{22} \end{matrix}$

b. $10i$

c. $-5\sqrt{2}$

d. $2\sqrt{5}$

_____ 3. Simplify $(3x^4 - 2) - (4 + 5x^2 - x^4)$

a. $-4x^4 - 5x^2 + 2$

b. $-4x^4 - 5x^2 - 6$

c. $-4x^4 - 10x^2 + 2$

d. $4x^4 - 5x^2 - 6$

$3x^4 - 2 - 4 - 5x^2 + x^4$

$4x^4 - 5x^2 - 6$

_____ 4. Simplify $(2r - 1)^2$

a. $4r^2 - 4r + 1$

b. $8r^2 - 8$

→ c. $4r^2 + 1$

d. $8r^2 - 16r + 8$

$$\begin{aligned} & (2r-1)(2r-1) \\ & 4r^2 - 2r - 2r + 1 \\ & 4r^2 - 4r + 1 \end{aligned}$$

_____ 5. Factor $16n^2 - 9$

a. $(4n-3)^2$

b. $(4n+3)(4n-3)$

c. $(-4n+3)(4n-3)$

d. $(4n+1)^2$

$$(4n+3)(4n-3)$$

$$25x^2 - 49$$

$$(5x-7)(5x+7)$$

_____ 6. Factor $2n^2 + 11n - 21$

a. $(2n+7)(n-3)$

b. $(2n+3)(n-7)$

c. $(2n-3)(n-7)$

d. $(2n-3)(n+7)$

$$(2n^2 + 14n) - (3n - 21)$$

$$2n(\underline{n+7}) - 3(\underline{n+7})$$

$$(n+7)(2n-3)$$

~~$\frac{ac}{b}$~~

~~$\frac{-42}{+11}$~~

~~$\frac{+14}{-3}$~~

7. Find the x-intercepts $x^2 + 14x + 48 = 0$

a. $\{7, -3\}$

b. $\{-6, -8\}$

c. $\{6, 4\}$

d. $\{7, 6\}$

$$(x+6)(x+8)$$

~~$x^2 + 14x + 48 = 0$~~

$$(x+6)(x+8) = 0$$

$$x+6=0$$

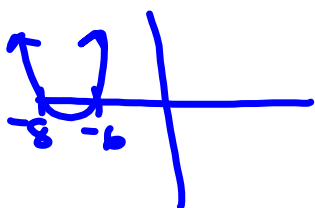
$$-6 \quad -6$$

$$x=-6$$

$$x+8=0$$

$$-8 \quad -8$$

$$x=-8$$



___ 8. Solve $p^2 + 4 = 20$

a. $\{2\sqrt{6}, -2\sqrt{6}\}$

~~b. $\{4, -4\}$~~

→ c. $\{4, -4\}$

d. $\{10, -10\}$

$(-4)^2$

$$p^2 + 4 = 20$$

$$\sqrt{p^2 + 4} = \sqrt{16}$$

$$p = \pm 4$$

9. Solve $6v^2 + 7v - 2 = 0$

a. $\left\{ \frac{-7 + \sqrt{97}}{12}, \frac{-7 - \sqrt{97}}{12} \right\}$

b. $\left\{ \frac{7 + \sqrt{97}}{12}, \frac{7 - \sqrt{97}}{12} \right\}$

c. $\left\{ \frac{2}{3}, \frac{1}{2} \right\}$

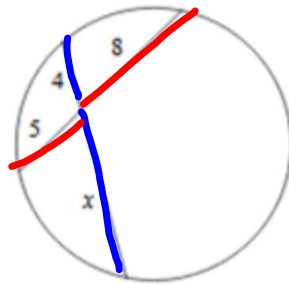
d. $\left\{ -\frac{1}{2}, -\frac{2}{3} \right\}$

$$\begin{aligned} a &= 6 \\ b &= 7 \\ c &= -2 \end{aligned}$$

$$\begin{aligned} x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\ x &= \frac{-7 \pm \sqrt{(7)^2 - 4(6)(-2)}}{2(6)} \\ &= \frac{-7 \pm \sqrt{49 + 48}}{12} \\ &= \frac{-7 \pm \sqrt{97}}{12} \end{aligned}$$

___ 10. Solve for x

- a. 8
- b. 11
- c. 9
- d. 10



$$4x = 5 \cdot 8$$

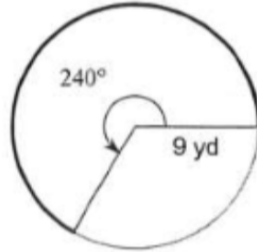
$$\cancel{4}x = 40$$

$$x = 10$$

- ____ 11. Given $g(n) = n^3 + 2n^2$ find $g(-6)$
- a. 45
 - b. 1
 - c. 16
 - d. -144

___12. Find the length of the arc.

- a. 169.6 yd
- b. 26.2 yd
- c. 37.7 yd
- d. 538.8 yd



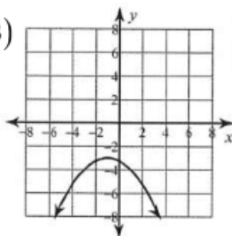
13. Identify the vertex, axis of symmetry, and min/max value of $y = -\frac{1}{4}(x-3)^2 + 1$.

a.

Vertex: $(-1, -3)$

Axis: $x = -1$

Max: -3

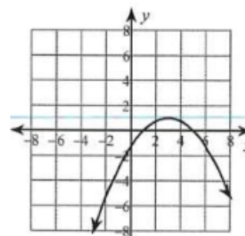


b.

Vertex: $(3, 1)$

Axis: $x = 3$

Max: 1

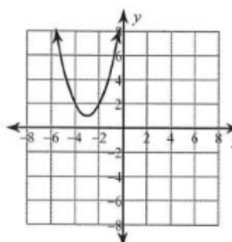


c.

Vertex: $(-3, 1)$

Axis: $x = -3$

Max: 1

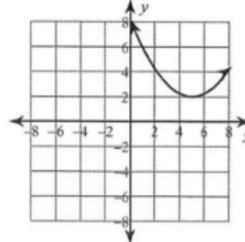


d.

Vertex: $(5, 2)$

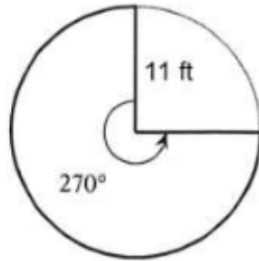
Axis: $x = 5$

Max: 2



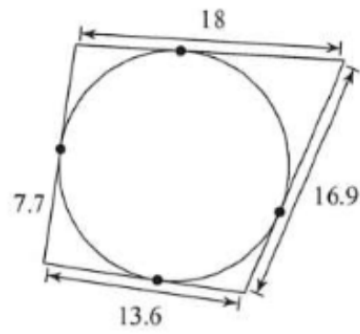
____ 14. Find the area of the sector.

- a. 8.4 ft^2
- b. 285.1 ft^2
- c. 102635.8 ft^2
- d. 167.6 ft^2

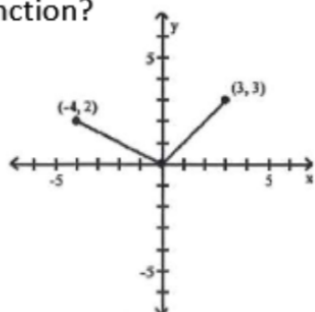


____15. Find the perimeter of the polygon.
Assume that lines which appear to be tangent are tangent.

- a. 45.3
- b. 44.8
- c. 63.2
- d. 39.7



_____ 16. The graph represents which piece-wise function?



- a. $f(x) = \begin{cases} -\frac{1}{2}x & \text{if } -4 < x < 0 \\ x & \text{if } 0 < x < 3 \end{cases}$ b. $f(x) = \begin{cases} -2x & \text{if } -4 \leq x \leq 0 \\ x & \text{if } 0 < x \leq 3 \end{cases}$
- c. $f(x) = \begin{cases} -\frac{1}{2}x & \text{if } -4 \leq x \leq 0 \\ x & \text{if } 0 < x \leq 3 \end{cases}$ d. $f(x) = \begin{cases} \frac{1}{2}x & \text{if } -4 < x < 0 \\ x & \text{if } 0 < x < 3 \end{cases}$

___17. Find $p(F|C)$.

	Friend	Not Friend	Total
Class	74		
No Class		1005	
Total	120		1400

- a. 0.21 b. 0.05
c. 0.62 d. 0.27

A gumball machine contains 5 pink gumballs, 10 yellow gumballs, and 7 blue gumballs. Find the probability of randomly selecting the following:

____18. A yellow gumball

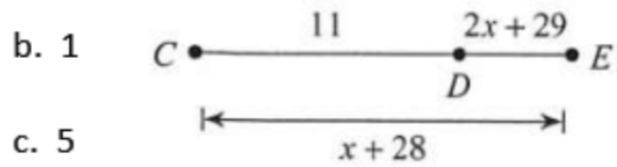
- a. $\frac{5}{11}$
- b. $\frac{5}{22}$
- c. $\frac{7}{22}$
- d. $\frac{10}{11}$

____19. A blue gumball and then a pink gumball without replacement.

- a. $\frac{35}{43}$
- b. $\frac{5}{66}$
- c. $\frac{4}{7}$
- d. $\frac{35}{484}$

___20. Find a value for x that would prove the segment addition postulate.

a. -11



d. -12

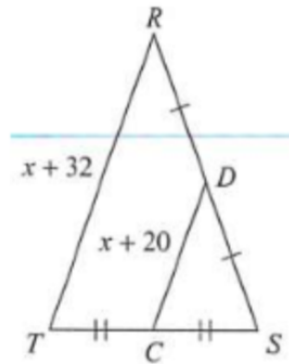
____ 21. Solve for x .

a. -8

b. -6

c. 11

d. -10



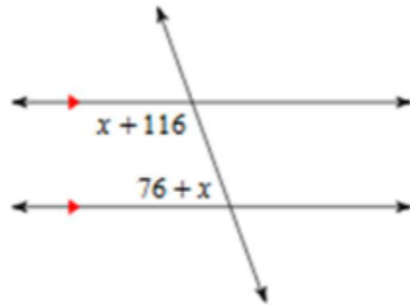
____22. State the value for x that proves lines u and v are parallel.

a. 40

b. 6

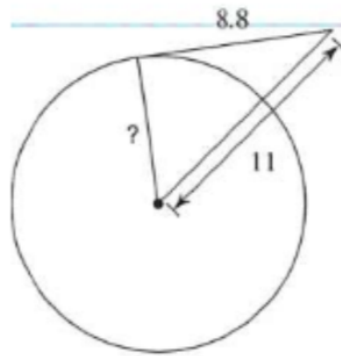
c. 14

d. -6



____ 23. Find the indicated segment length.
Assume that lines which appear to be tangent are tangent.

- a. 43.6
- b. 14.1
- c. 6.6
- d. 4.4



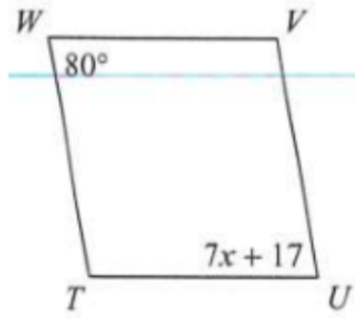
____ 24. Given a parallelogram, solve for x .

a. 10

b. 1

c. 3

d. 9



___25. State if the triangles are similar. If so, state how you know they are similar and complete the similarity statement

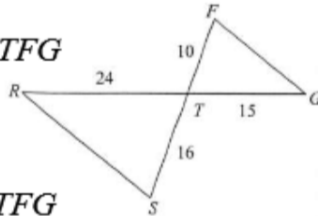
$$\triangle TSR \sim \underline{\hspace{2cm}}$$

a. similar; SAS similarity; $\triangle TFG$

b. not similar

c. similar; AA similarity; $\triangle TFG$

d. similar; SSS similarity; $\triangle TFG$



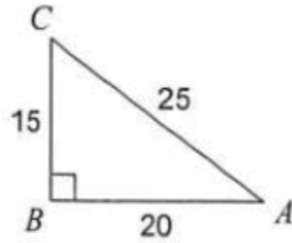
26. Find the value of the trigonometric ratio $\tan C$.

a. $\frac{5}{3}$

b. $\frac{4}{3}$

c. $\frac{3}{4}$

d. $\frac{4}{5}$



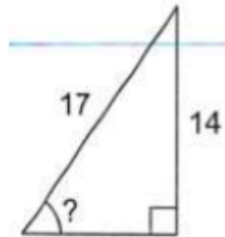
___27. Find the measure of the indicated angle to the nearest degree.

a. 55°

b. 35°

c. 33°

d. 51°



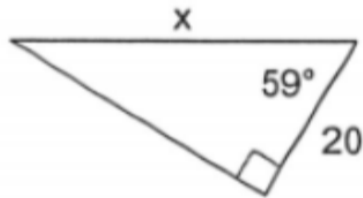
____28. Find the missing side. Round to the nearest tenth.

a. 38.8

b. 23.3

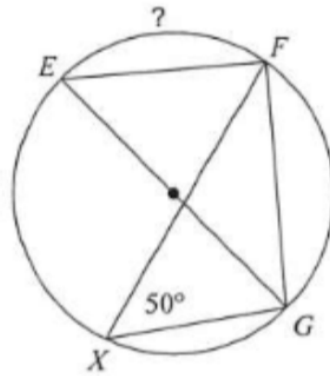
c. 21.2

d. 10.3



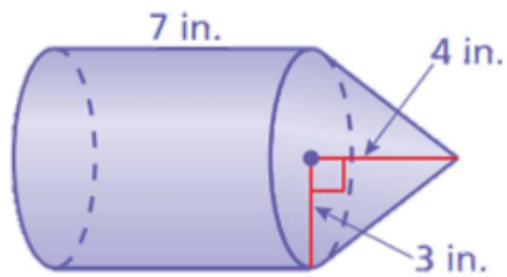
____ 29. Find the measure of the indicated arc.

- a. 98°
- b. 64°
- c. 80°
- d. 113°



____30. Find the volume. Round to the nearest hundredth, if necessary.

- a. 254.47 in^3
- b. 58.90 in^3
- c. 311.02 in^3
- d. 235.62 in^3



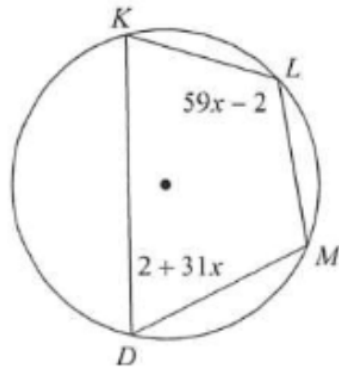
___ 31. Find $m\angle KDM$

a. 57°

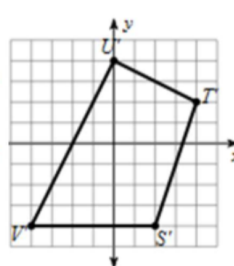
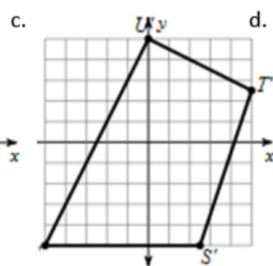
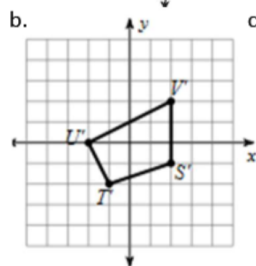
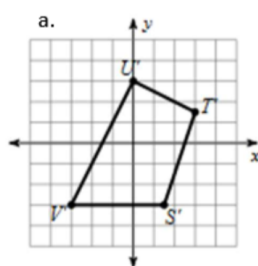
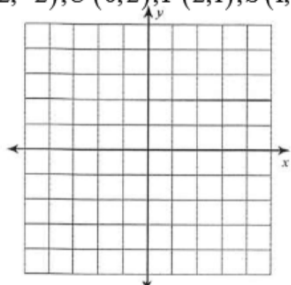
b. 70°

c. 95°

d. 64°



32. Graph the points $V(-2,-2), U(0,2), T(2,1), S(1,-2)$, then dilate the figure by 1.5



____33. What is the equation of the circle shown to the right. Use the information provided to write the equation of the circle.

- a. $(x - 4)^2 + (y - 2)^2 = 9$
- b. $(x + 4)^2 + (y + 2)^2 = 9$
- c. $(x + 4)^2 + (y + 2)^2 = 3$
- d. $(x - 4)^2 + (y - 2)^2 = 6$

