

## Geometry STAAR Practice Test A

- 1 What is the measure of each interior angle of a regular 12-gon?

A  $132^\circ$                       C  $180^\circ$   
 B  $150^\circ$                       D  $216^\circ$

- 2 Consider the following statements.

A prime number is a natural number that has no positive divisors other than 1 and itself.

The numbers 3, 5, and 7 are prime numbers.

Therefore, all prime numbers are odd numbers.

Which counterexample can be used to show that the conclusion is not always true?

F 2                                  H 37  
 G 12                                J 99

- 3 Which of the following is an essential difference between Euclidean geometry and spherical geometry?

A the number of angles in a triangle  
 B the existence of right angles  
 C the number of degrees in a circle  
 D the nature of parallel lines

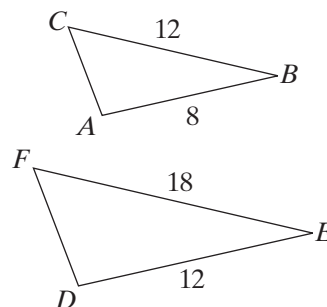
- 4 A right triangle is drawn on a coordinate grid. One of the two legs can be modeled by the equation  $y = 2x + 5$ . Which equation could model the other leg of the right triangle?

F  $y = \frac{1}{2}x + 1$   
 G  $y = -\frac{1}{2}x + 2$   
 H  $y = -2x + 4$   
 J  $y = -2x - 1$

- 5 When the ordered pairs  $A(1, 1)$ ,  $B(3, 5)$ ,  $C(7, 5)$ , and  $D(9, 1)$  are connected, what needs to be true in order to prove  $ABCD$  is a trapezoid?

A The slopes of exactly one pair of line segments must be negative reciprocals.  
 B The slopes of exactly one pair of line segments must be reciprocals.  
 C The slopes of exactly one pair of line segments must be the same.  
 D The slopes of exactly one pair of line segments must be zero.

- 6  $\triangle ABC$  and  $\triangle DEF$  are similar.



Which of the following must be true about the similar triangles?

F  $m\angle E = m\angle C$

G  $m\angle F = m\angle A$

H  $\frac{BC}{EF} = \frac{AB}{FD}$

- J The perimeter of  $\triangle DEF$  is 1.5 times the perimeter of  $\triangle ABC$ .

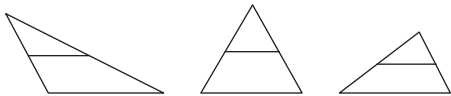
**7** The sum of the interior angles of a triangle is  $180^\circ$ . The sum of the interior angles of a quadrilateral is  $360^\circ$ . The sum of the interior angles of a pentagon is  $540^\circ$ . Use what you know about the sum of the interior angles of a triangle, quadrilateral, and pentagon. What is the sum, in degrees, of the interior angles of a hexagon?

Record your answer and fill in the bubbles on your answer document.

**8** A circle centered at  $(-1, 3)$  passes through the point  $(4, 6)$ . What is the approximate circumference of the circle?

- F** 18.3 units
- G** 36.6 units
- H** 29.8 units
- J** 59.6 units

**9** Three triangles and their midsegments are shown.



What conjecture can you make about the midsegment of a triangle?

- A** A midsegment between two sides of a triangle is perpendicular to the third side and is half the length of the third side.
- B** A midsegment between two sides of a triangle is parallel to the third side and is half the length of the third side.
- C** A midsegment between two sides of a triangle is perpendicular to the third side and is twice the length of the third side.
- D** A midsegment between two sides of a triangle is parallel to the third side and is twice the length of the third side.

**10** The orthocenter of a triangle is the point where the altitudes of a triangle intersect. Which set of steps shows how to construct the orthocenter of a triangle?

- F** Construct the angle bisector of each vertex of the triangle. The point where the lines intersect is the orthocenter.
- G** Construct a line perpendicular to each side of the triangle that passes through the opposite vertex. The point where the lines intersect is the orthocenter.
- H** Construct a line perpendicular to each side of the triangle through the midpoint of the side. The point where the lines intersect is the orthocenter.
- J** Construct a line through the midpoint of each side of the triangle through the opposite vertex. The point where the lines intersect is the orthocenter.

**11** Using the Law of Detachment and the given statements, what is the conclusion?

If a person is on the company's payroll, then the person is an employee.

Jackson is on the company's payroll.

- A** Jackson might be an employee.
- B** Jackson used to be an employee.
- C** Jackson is an employee.
- D** Jackson is not an employee.

**GO ON**

**12** What is the equation of the line that passes through the point  $(-8, 2)$  and is perpendicular to the line  $y = -2x + 6$ ?

**F**  $y = 2x + 10$

**G**  $y = 2x + 18$

**H**  $y = \frac{1}{2}x + 6$

**J**  $y = \frac{1}{2}x + 10$

**13** The table below relates the number of sides of a polygon to the number of diagonals.

Number of Sides, $n$	Number of Diagonals
4	2
5	5
6	9
7	14
8	20
9	27
10	35

Which expression can you use to find the number of diagonals in a polygon?

**A**  $2n$

**B**  $2n + 1$

**C**  $\frac{n-2}{2}$

**D**  $\frac{n(n-3)}{2}$

**14** What is the cross section formed by a plane intersecting a sphere?

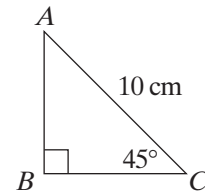
**F** circle

**H** triangle

**G** square

**J** rectangle

**15** Triangle  $ABC$  is shown below.



Approximately how much longer is  $\overline{AC}$  than  $\overline{AB}$ ?

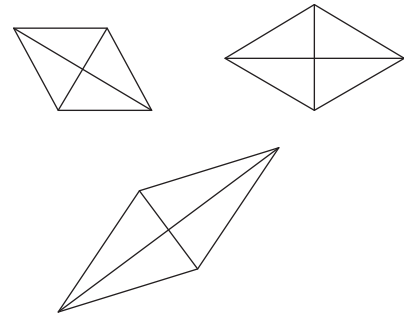
**A** 2 cm

**B** 3 cm

**C** 5 cm

**D** 7 cm

**16** Three rhombuses and their diagonals are shown.



What conjecture can be made about the diagonals of a rhombus?

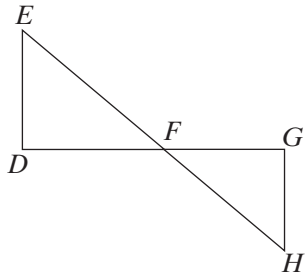
**F** One diagonal of a rhombus is two times longer than the other diagonal.

**G** The diagonals of a rhombus are congruent.

**H** The diagonals of a rhombus are parallel to each other.

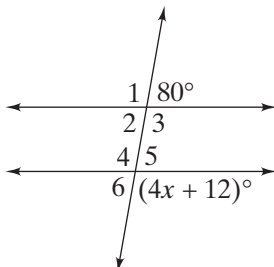
**J** The diagonals of a rhombus are perpendicular to each other.

- 17 In the figure below,  $\overline{DE}$  is parallel to  $\overline{GH}$ .



If the perimeter of  $\triangle DEF$  is 22 mm,  $DF = 8$  mm, and  $FG = 4$  mm, what is the perimeter of  $\triangle GHF$ ?

- A 11 mm
  - B 16 mm
  - C 22 mm
  - D 44 mm
- 18 What is the value of  $x$ ?



- F 100
- G 88
- H 28
- J 22

- 19 Damon's cup is in the shape of a cylinder. The height of the cup is 6 inches and the base has a diameter length of 2.5 inches. Damon fills the cup three-fourths full of water. How much water, in cubic inches, is in the cup? Use 3.14 for  $\pi$ . Round to the nearest hundredth.

Record your answer and fill in the bubbles on your answer document.

- 20 A line segment has endpoints of  $(-2, 6)$  and  $(-4, -9)$ . What is the midpoint of the line segment?
- F  $(3, -7.5)$
  - G  $(-3, 7.5)$
  - H  $(-3, -1.5)$
  - J  $(-3, 1.5)$

- 21 Let points  $A, B, C, D,$  and  $E$  be collinear. Let  $B$  be the midpoint of  $\overline{AC}$ , let  $C$  be the midpoint of  $\overline{BD}$ , and let  $D$  be the midpoint of  $\overline{CE}$ . What justification can you use to fill in the blank to prove that  $C$  is the midpoint of  $\overline{AE}$ ?

Because  $B, C,$  and  $D$  are the midpoints of  $\overline{AC}, \overline{BD},$  and  $\overline{CE},$  respectively, you know that  $AB = BC, BC = CD,$  and  $CD = DE.$  By the \_\_\_\_\_?\_\_\_\_\_,  $AB = DE.$  By the Addition Property of Equality,  $AB + BC = CD + DE.$  But  $AB + BC = AC$  and  $CD + DE = CE,$  so  $AC = CE.$  Therefore,  $C$  is the midpoint of  $\overline{AE}.$

- A Reflexive Property of Equality
- B Transitive Property of Equality
- C Substitution Property
- D Symmetric Property of Equality



- 22 Using the Law of Syllogism and the given statements, what is the conclusion?

If a quadrilateral is a square, then it has four congruent sides.

If a quadrilateral has four congruent sides, then it is a rhombus.

- F If a quadrilateral is a rhombus, then it is a square.
- G If a quadrilateral is a square, then it is a rhombus.
- H If a quadrilateral has four congruent sides, then it is not a square.
- J If a quadrilateral has four congruent sides, then it is not a rhombus.

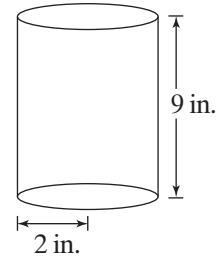
- 23 How many faces does a polyhedron have if it has 8 vertices and 12 edges?

- A 2
- B 6
- C 14
- D 26

- 24 The volume of a rectangular prism is  $400 \text{ cm}^3$ . If each dimension of the rectangular prism is doubled, how is the volume affected?

- F The volume is doubled.
- G The volume is multiplied by 4.
- H The volume is multiplied by 8.
- J The volume is multiplied by 16.

- 25 What is the approximate total surface area of the cylinder shown below? Use 3.14 for  $\pi$ . Round to the nearest tenth.



- A  $452.2 \text{ in.}^2$
- B  $251.1 \text{ in.}^2$
- C  $138.2 \text{ in.}^2$
- D  $113.0 \text{ in.}^2$

- 26 If  $\angle C$  and  $\angle D$  are supplementary angles and the measure of  $\angle D$  is  $f$ , which equation can be used to find  $e$ , the measure of  $\angle C$ ?

- F  $e = 90 - f$
- G  $e = 180 + f$
- H  $e = 90 + f$
- J  $e = 180 - f$

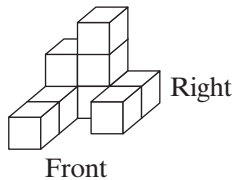
- 27 A ten-foot ladder is placed on the side of a house. The distance between the base of the ladder and the house is 5 feet. How far up the house, in feet, does the ladder reach? Round to the nearest tenth.

Record your answer and fill in the bubbles on your answer document.

28 Triangle  $CDE$  is congruent to triangle  $LMN$ . Which side is congruent to  $\overline{LN}$ ?

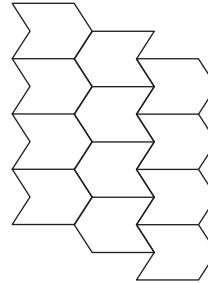
- F  $\overline{CD}$
- G  $\overline{DE}$
- H  $\overline{CE}$
- J  $\overline{LM}$

29 Which of the following best represents the front view of the figure shown below?



- A
- B
- C
- D

30 What transformation(s) are used to make the pattern shown below from one of its hexagonal tiles?

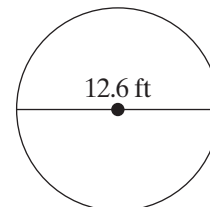


- F Translation only
- G Translation and reflection
- H Reflection only
- J Rotation only

31 Triangle  $ABC$  is a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle. If triangle  $A'B'C'$  is the result of reflecting triangle  $ABC$  over the  $x$ -axis, what are the angle measures of triangle  $A'B'C'$ ?

- A  $20^\circ$ - $70^\circ$ - $90^\circ$
- B  $60^\circ$ - $60^\circ$ - $60^\circ$
- C  $45^\circ$ - $45^\circ$ - $90^\circ$
- D  $30^\circ$ - $60^\circ$ - $90^\circ$

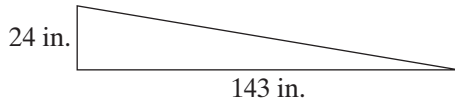
32 Dean has a table with a circular top. What is the area, in square feet, of the table top? Use 3.14 for  $\pi$ . Round your answer to the nearest tenth.



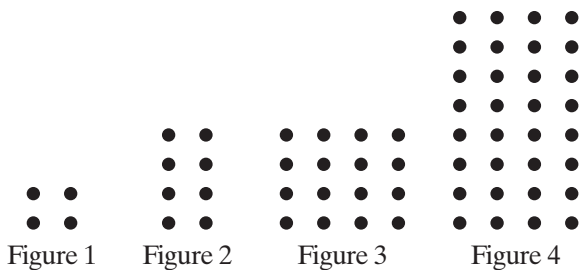
Record your answer and fill in the bubbles on your answer document.



- 33 Kristy is building a ramp. The right face of the ramp is in the shape of a right triangle. The base length and height of the ramp are shown. What is the distance along the inclined portion of the ramp?

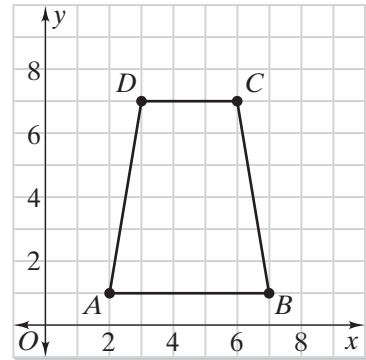


- A 119 in.  
 B 141 in.  
 C 145 in.  
 D 167 in.
- 34 Which equation represents the pattern, where  $x$  is the figure number and  $y$  is the number of dots in the figure?



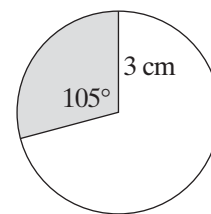
- F  $y = 4x$   
 G  $y = 4x + 1$   
 H  $y = 2^x$   
 J  $y = 2^x + 1$

- 35 Trapezoid  $ABCD$  is graphed on the coordinate plane shown below.



Which set of coordinates represents the vertices of a trapezoid congruent to trapezoid  $ABCD$ ?

- A (13, 2), (14, 2), (11, 8), (16, 8)  
 B (3, 6), (3, 9), (9, 7), (9, 10)  
 C (8, 4), (14, 5), (8, 9), (14, 8)  
 D (14, 5), (17, 5), (12, 11), (19, 11)
- 36 What is the approximate area of the shaded region below? Use 3.14 for  $\pi$ . Round to the nearest tenth.



- F  $4.4 \text{ cm}^2$   
 G  $8.2 \text{ cm}^2$   
 H  $16.5 \text{ cm}^2$   
 J  $28.3 \text{ cm}^2$

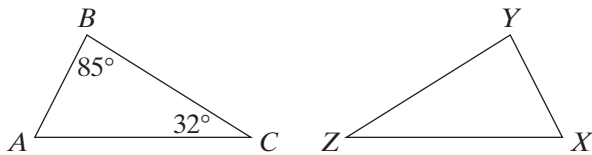
37 The following points can be used to determine several lines:

$A(3, -9), B(0, -2), C(4, 5),$   
 $D(5, 19), F(-2, 20), G(12, 19)$

Which line is perpendicular to  $\overleftrightarrow{AC}$ ?

- A  $\overleftrightarrow{BC}$                       C  $\overleftrightarrow{DF}$   
 B  $\overleftrightarrow{CD}$                       D  $\overleftrightarrow{FG}$

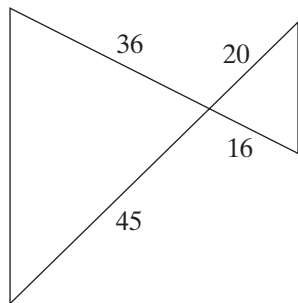
38  $\triangle ABC \cong \triangle XYZ$



What is the measure of  $\angle X$ ?

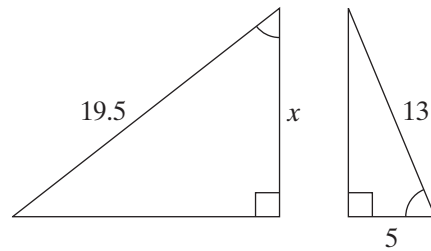
- F  $32^\circ$   
 G  $63^\circ$   
 H  $85^\circ$   
 J  $180^\circ$

39 If the triangles are similar, which theorem or postulate proves they are similar?



- A AA Postulate  
 B SAS Theorem  
 C SSS Theorem  
 D The triangles are not similar.

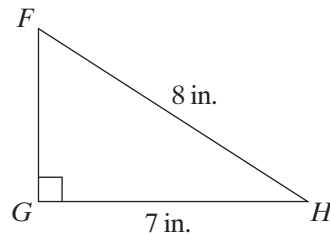
40 The triangles shown are similar.



What is the value of  $x$ ?

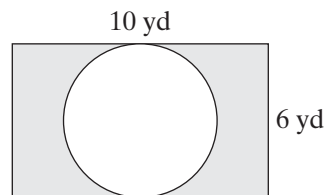
Record your answer and fill in the bubbles on your answer document.

41 In the triangle shown below, what is the approximate length of  $\overline{FG}$ ?



- A 10.6 in.                      C 3.9 in.  
 B 5.5 in.                      D 1.0 in.

42 A circle is drawn inside a rectangle. Point  $L$  in the rectangle is chosen at random. What is the probability that point  $L$  lies in the shaded region? Use 3.14 for  $\pi$ . Round to the nearest percent.

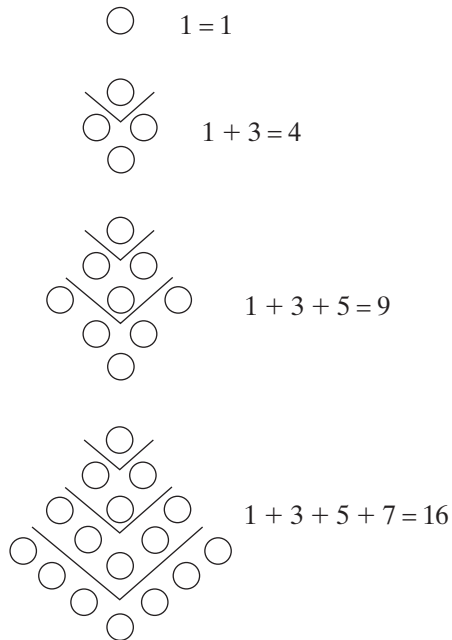


- F 11%                      H 53%  
 G 47%                      J 89%

**GO ON**



43 Look at the following progression of figures.



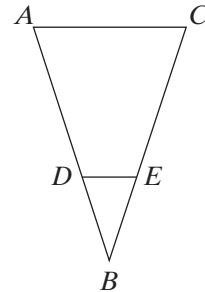
Based on this pattern, what do you think is an expression for the sum of the first  $n$  odd numbers?

- A  $n^2$
- B  $3n$
- C  $\frac{2n(n+1)}{3}$
- D  $(n+1)(2n+1)$

44 The midpoint of  $\overline{JK}$  is  $(-4, 1)$ . If  $J$  has coordinates  $(6, 2)$  and  $K$  has coordinates  $(x, y)$ , which equation can be used to find  $x$ ?

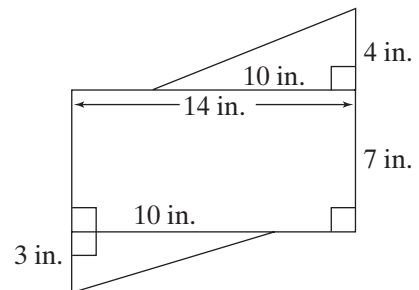
- F  $x = (-4)(2) - 6$
- G  $x = (-4)(2) + 6$
- H  $x = (6 - 4) \div 2$
- J  $x = (6 + 4) \div 2$

45 In the figure below,  $\overline{AC}$  is parallel to  $\overline{DE}$  and  $\overline{BC}$  is three times as long as  $\overline{BE}$ . Which of the following statements is true?



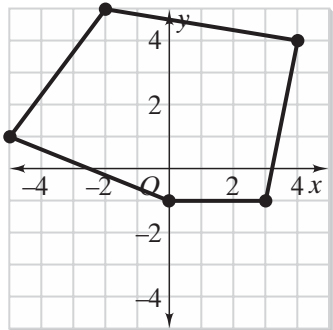
- A  $\triangle DBE$  has three times the area of  $\triangle ABC$ .
- B  $\overline{AC}$  is three times the length of  $\overline{AD}$ .
- C  $\overline{AD}$  is three times the length of  $\overline{BE}$ .
- D  $\overline{AC}$  is three times the length of  $\overline{DE}$ .

46 What is the area of the figure shown below?



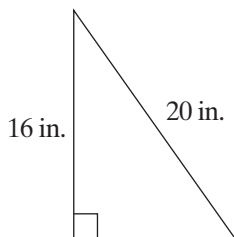
- F  $196 \text{ in.}^2$
- G  $138 \text{ in.}^2$
- H  $133 \text{ in.}^2$
- J  $98 \text{ in.}^2$

- 47 Which set of ordered pairs contains only coordinates of vertices of the polygon graphed below?



- A  $\{(-2, 5), (-5, 1), (-1, 0)\}$
- B  $\{(1, -5), (4, 4), (-1, 3)\}$
- C  $\{(3, 1), (-2, -5), (0, 1)\}$
- D  $\{(-5, 1), (0, -1), (3, -1)\}$

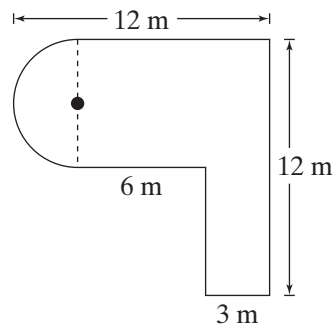
- 48 Craig has a carpet remnant with the dimensions shown below.



What is the area of this remnant?

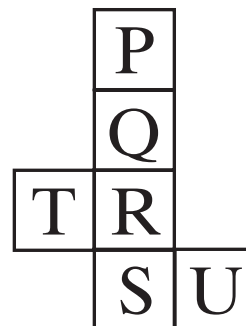
- F  $96 \text{ in.}^2$
- G  $160 \text{ in.}^2$
- H  $192 \text{ in.}^2$
- J  $320 \text{ in.}^2$

- 49 What is the area of the figure? Use 3.14 for  $\pi$ . Round to the nearest hundredth.



- A  $68.13 \text{ m}^2$
- B  $82.26 \text{ m}^2$
- C  $86.13 \text{ m}^2$
- D  $100.26 \text{ m}^2$

- 50 The net below shows the surface of a cube.



Which letter is on the face parallel to the face with the letter Q?

- F R
- G S
- H T
- J U

.....

**51** Right triangle  $DEF$  has side lengths of 9 feet, 40 feet, and 41 feet. Which of the following are side lengths of a triangle similar to triangle  $DEF$ ?

- A** 7 ft, 24 ft, 25 ft
- B** 8 ft, 15 ft, 17 ft
- C** 11.25 ft, 50 ft, 61.5 ft
- D** 22.5 ft, 100 ft, 102.5 ft

**52** A cone has a volume of  $35 \text{ cm}^3$ . If the radius of the cone is doubled and the height is held constant, what will be the new volume of the cone?

- F**  $280.0 \text{ cm}^3$
- G**  $219.8 \text{ cm}^3$
- H**  $140.0 \text{ cm}^3$
- J**  $70.0 \text{ cm}^3$



# STAAR Practice Test A Answer Sheet

- 1  A  B  C  D  
 2  A  B  C  D  
 3  A  B  C  D  
 4  F  G  H  J  
 5  A  B  C  D  
 6  F  G  H  J
- Item 7**  
Use grid BELOW
- 8  F  G  H  J  
 9  A  B  C  D  
 10  F  G  H  J  
 11  A  B  C  D

- 12  F  G  H  J  
 13  A  B  C  D  
 14  A  B  C  D  
 15  A  B  C  D  
 16  F  G  H  J  
 17  A  B  C  D  
 18  F  G  H  J
- Item 19**  
Use grid BELOW
- 20  F  G  H  J  
 21  A  B  C  D  
 22  F  G  H  J

- 23  A  B  C  D  
 24  F  G  H  J  
 25  A  B  C  D  
 26  F  G  H  J
- Item 27**  
Use grid BELOW
- 28  F  G  H  J  
 29  A  B  C  D  
 30  F  G  H  J  
 31  A  B  C  D
- Item 32**  
Use grid BELOW

- 33  A  B  C  D  
 34  F  G  H  J  
 35  A  B  C  D  
 36  F  G  H  J  
 37  A  B  C  D  
 38  F  G  H  J  
 39  A  B  C  D
- Item 40**  
Use grid BELOW
- 41  A  B  C  D  
 42  F  G  H  J  
 43  A  B  C  D

- 44  A  B  C  D  
 45  A  B  C  D  
 46  F  G  H  J  
 47  A  B  C  D  
 48  A  B  C  D  
 49  A  B  C  D  
 50  F  G  H  J  
 51  A  B  C  D  
 52  F  G  H  J

7

	7	2	0	.		
0	0	0	<input checked="" type="radio"/>		0	0
1	1	1	1		1	1
2	2	<input checked="" type="radio"/>	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	<input checked="" type="radio"/>	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

19

		2	2	.	0	8
0	0	0	0		<input checked="" type="radio"/>	0
1	1	1	1		1	1
2	2	<input checked="" type="radio"/>	<input checked="" type="radio"/>		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	<input checked="" type="radio"/>
9	9	9	9		9	9

27

			8	.	7	
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		<input checked="" type="radio"/>	7
8	8	8	<input checked="" type="radio"/>		8	8
9	9	9	9		9	9

32

	1	2	4	.	6	
0	0	0	0		0	0
1	<input checked="" type="radio"/>	1	1		1	1
2	2	<input checked="" type="radio"/>	2		2	2
3	3	3	3		3	3
4	4	4	<input checked="" type="radio"/>		4	4
5	5	5	5		5	5
6	6	6	6		<input checked="" type="radio"/>	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

40

			7	.	5	
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		<input checked="" type="radio"/>	5
6	6	6	6		6	6
7	7	7	<input checked="" type="radio"/>		7	7
8	8	8	8		8	8
9	9	9	9		9	9

**Solids of Rotations**

Name: \_\_\_\_\_

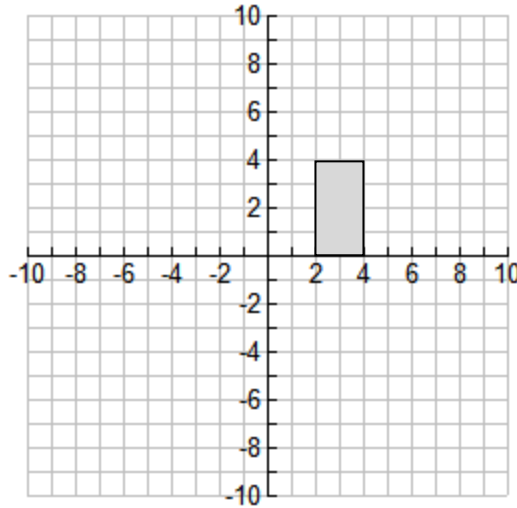
Date: \_\_\_\_\_ Period: \_\_\_\_\_

**1. Rotate the shaded region about the x-axis.**

Description:  
Cylinder

Formula:  
 $V = \pi r^2 h$

Volume:  
 $V = \pi(4)^2(2)$   
 $= 32\pi \text{ units}^3$



**2. Rotate the shaded region about the y-axis.**

Description:

Formula:

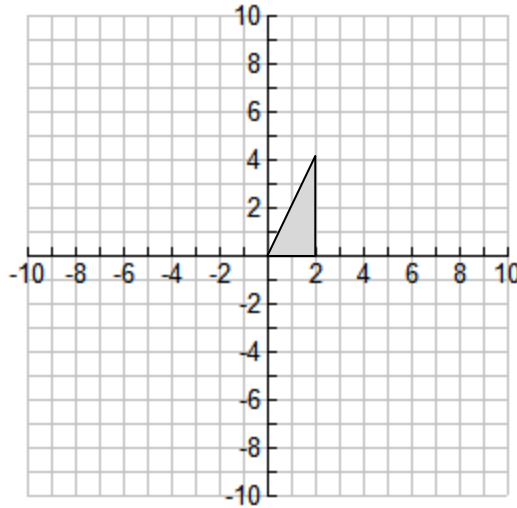
Volume:

**3. Rotate the shaded region about the line  $x = 2$ .**

Description:

Formula:

Volume:



**4. Rotate the shaded region about the line  $x = 0$ .**

Description:

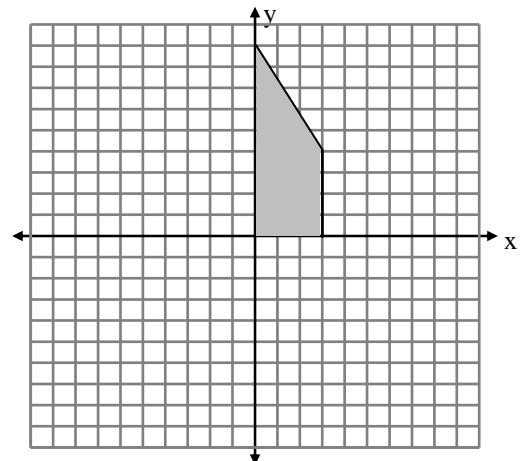
Formula:

Volume:

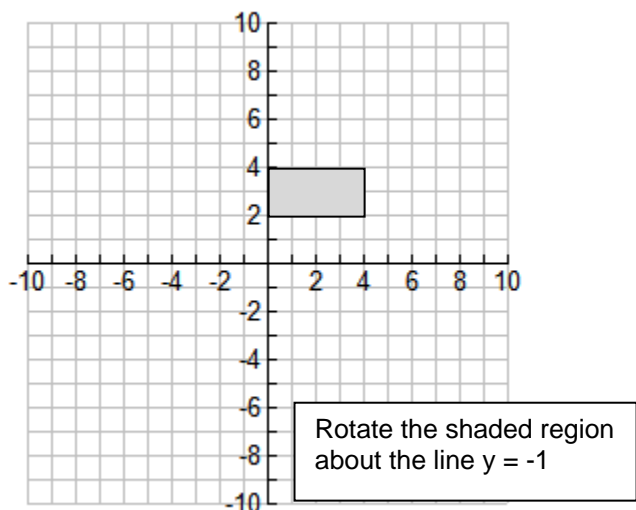
**5. The plane region is revolved completely about the y-axis. Describe the solid and find its surface area and volume. Round your answer to the nearest whole number.**

SA = \_\_\_\_\_

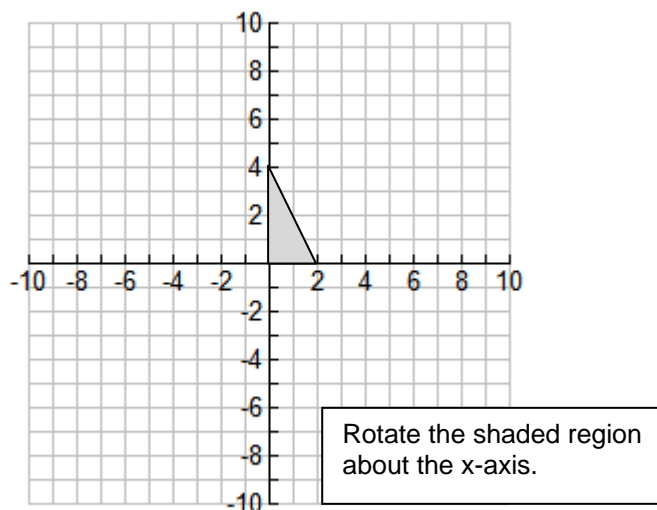
V = \_\_\_\_\_



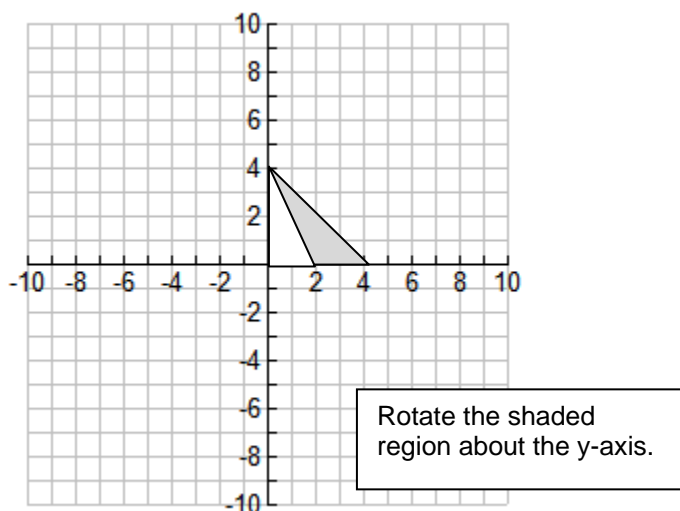
Write the description, formula, and volume (in terms of  $\pi$ ) for each:



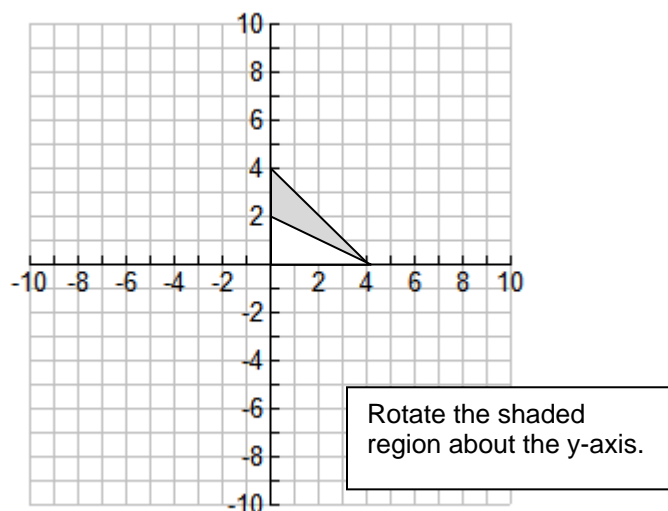
IV



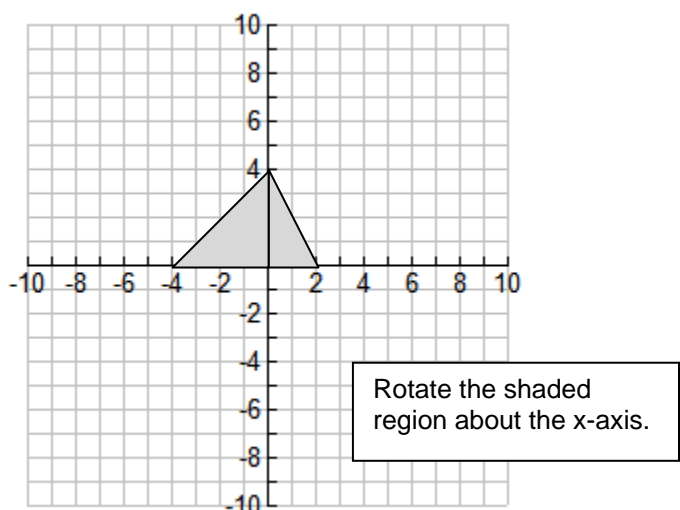
V



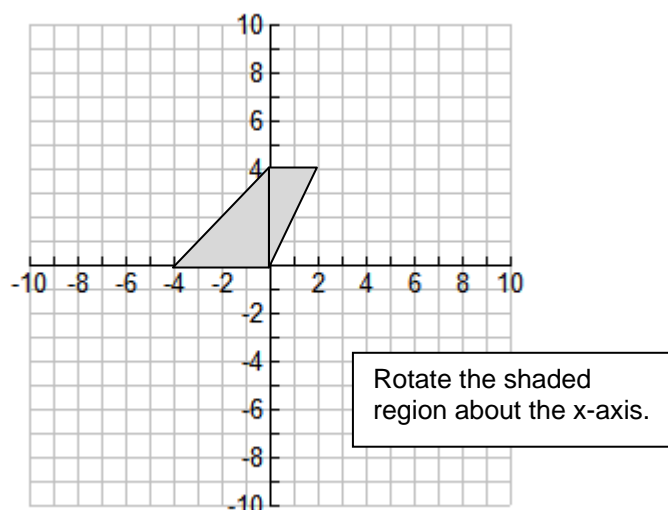
IX



X



XI



XII

Answers: **IV)**  $64\pi$  units<sup>3</sup>. **V)**  $32/3 \pi$  units<sup>3</sup>. **IX)**  $16\pi$  units<sup>3</sup>. **X)**  $32/3 \pi$  units<sup>3</sup>. **XI)**  $32\pi$  units<sup>3</sup>. **XII)**  $128/3 \pi$  units<sup>3</sup>.

# Slopes of a Curve

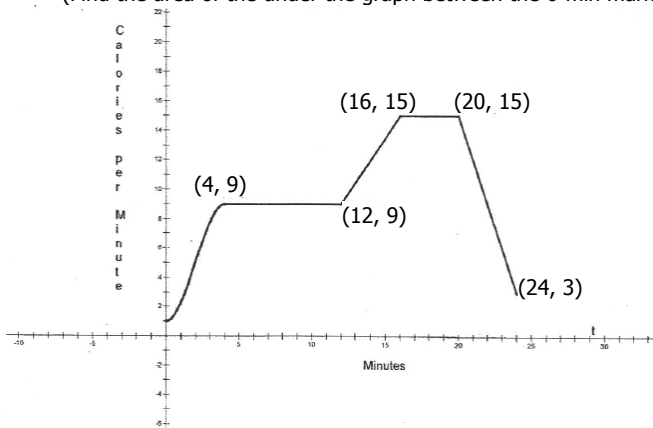
Pre-AP topic

Name: \_\_\_\_\_

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

Adapted from "Adapted--Calculus AB--2006--Form B Problem 4" in *Pre-AP Geometry (High School) Course Materials* by Melissa Burkhead

- (a) Find the total number of calories burned over the time interval  $6 \leq t \leq 18$  minutes.  
(Find the area of the under the graph between the 6-min mark and 18-min mark.)



- (b) The setting on the machine is now changed so that an average of 15 calories per minute is burned during the time interval  $6 \leq t \leq 18$ . What is the total number of calories now burned?
- (c) This new setting is modeled by the new function  $g(t) = f(t) + c$ . Find  $c$ .  
(The graph of  $f(t)$  was translated up  $c$  units, so the area under the graph has increased. How many units does the graph need to move up to make up the difference between the new area and original area?)  
(Hint: If  $c = 1$ , meaning the graph of  $f(t)$  was translated up 1 unit, how much does the area increase?  
If  $c = 2$ , how much does the area increase?)

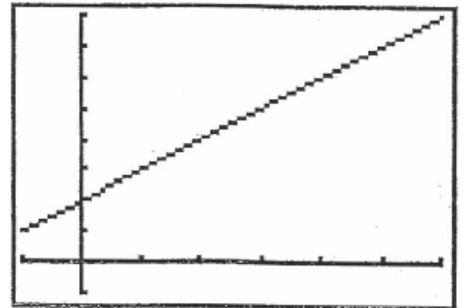
# Approximating Area under a Curve

Adapted from *Pre-AP Geometry (High School) Course Materials* by Melissa Burkhead

Name: \_\_\_\_\_

- 1) Consider the function  $f(x) = x + 2$  on the interval  $[1, 5]$ . Shade the area bounded by the x-axis, the curve  $f(x)$ , the line  $x = 1$ , and the line  $x = 5$ .

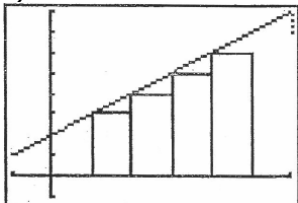
Approximate this area by using only two rectangles.



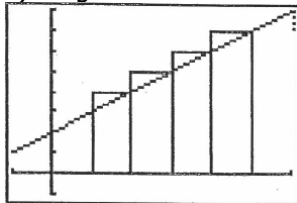
Is your answer an over-approximation or an under-approximation? Why?

Approximate the area under the curve using

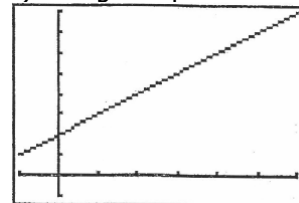
- a) a left sum with 4 rectangles



- b) a right sum with 4 rectangles



- c) a single trapezoid

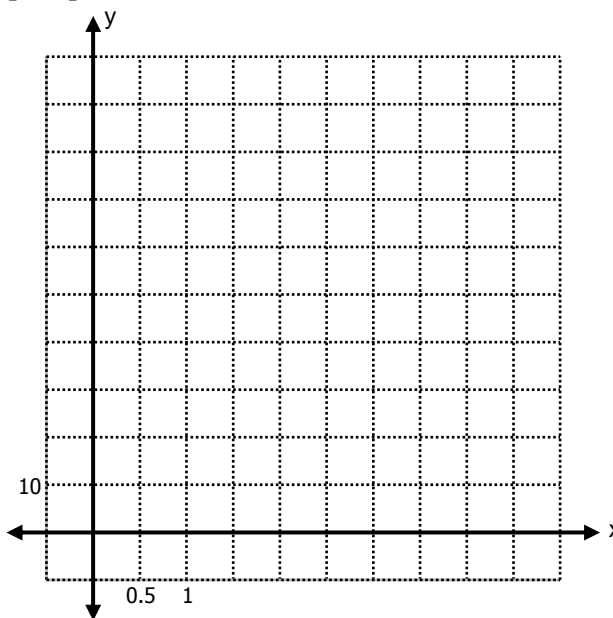


2) Consider the function  $f(x) = x^3 + 1$  on the interval  $[1, 4]$ .

Complete the table below.

Use the points to plot and sketch a graph.

x	y
-1	
0	
1	
2	
3	
4	65



On the graphing calculator, enter the function in the  $Y =$  screen. Press **GRAPH** to see what it looks like, then press **2ND** **GRAPH** to complete the table. Plot these points and connect them to sketch the graph.

Shade the area *bounded* by the \_\_\_\_\_, the curve  $f(x)$ , the line \_\_\_\_\_, and the line \_\_\_\_\_.

a) Approximate the area under the curve using a left sum first with 3 rectangles, then using 6 rectangles.

Hint: Press **2ND** **WINDOW** to change the TBLSET: if it says  $\Delta Tbl = 1$ , change it to  $\Delta Tbl = 0.5$

b) Approximate the area under the curve using a right sum first with 3 rectangles, then using 6 rectangles.

c) Approximate the sum using 6 trapezoids. Do you see a computational short cut?

3) Graph  $y = -(x - 4)^2 + 9$ . Shade the area bounded by the curve, x-axis, lines  $x = 2$  and  $x = 7$ .

Approximate the area under the curve using a...

a) left sum with 5 rectangles

b) right sum with 5 rectangles

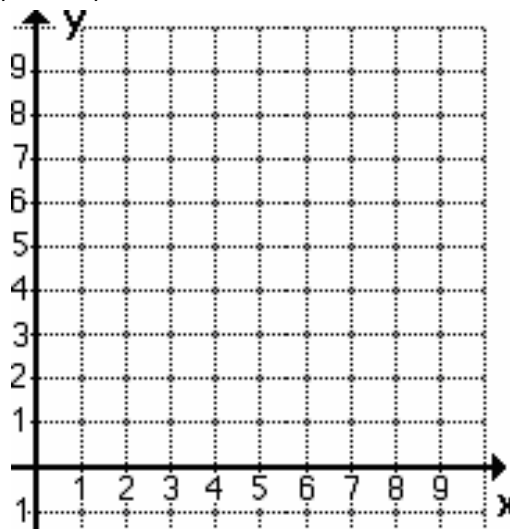
c) sum with 5 trapezoids

d) left sum with 10 rectangles

e) right sum with 10 rectangles

f) sum with 10 trapezoids

x	y



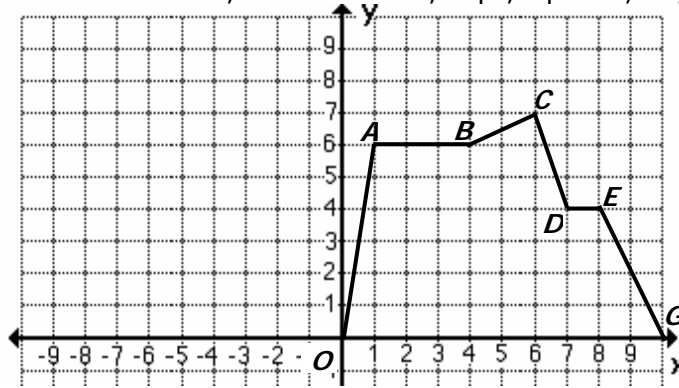


**Review for Pre-AP Test 4-3**

Name: \_\_\_\_\_

Solids of Rotation will also be on the test! Be sure to finish that handout! Date: \_\_\_\_\_ Period: \_\_\_\_\_

For each part of a **piecewise linear function**, find the interval, slope, equation, length, and area under the curve:



Graph of  $f(x)$

Find the:	... of $\overline{OA}$	... of $\overline{AB}$	... of $\overline{BC}$	... of $\overline{CD}$	... of $\overline{DE}$	... of $\overline{EG}$
1. Interval		$1 \leq x \leq 4$				
2. Slope						
3. Equation in slope-intercept form						
4. Length (use the distance formula or draw a right $\Delta$ )						
5. Area under the curve (calculate a rectangle, triangle, or trapezoid)						
6. Is $f(x)$ increasing/ decreasing/ constant?						
7. Is the slope of $f(x)$ incr / decr / constant?						

8. Which segments are parallel?

Which segments are perpendicular?

9. What is the area under the curve bounded by the curve  $f(x)$ , the x-axis, the line  $x = 0$ , and the line  $x = 10$ ?

10. If  $f(x)$  is translated 5 units up, how will the area under the curve change (w/ the same boundaries as above)?

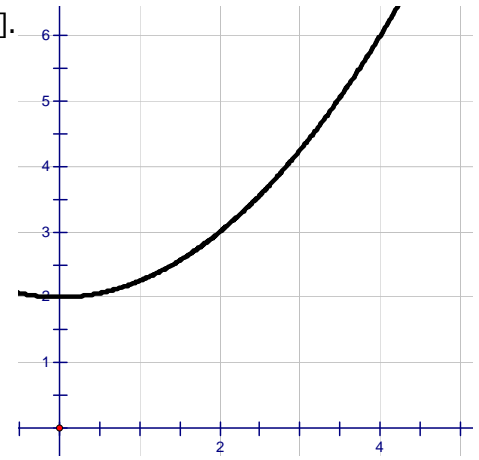
11. What is the area under the curve bounded by the curve  $f(x)$ , the x-axis, the line  $x = 4$ , and the line  $x = 8$ ?

**Area under a Curve:** Consider the curve  $y = 0.25x^2 + 2$  in the interval  $[1, 4]$ .

12. Is the function increasing, decreasing, or constant in the interval  $[1, 4]$ ?

13. Is the slope of the function increasing, decreasing, or constant?

X	y
1	
2	
3	
4	



Approximate the area under the curve in the interval  $[1, 4]$  using:

14. ... a left sum with 3 rectangles.	15. ... a right sum with 3 rectangles.	16. ... a sum of 3 trapezoids.
---------------------------------------	----------------------------------------	--------------------------------

Solve the following systems of equations:

17. Marcos had 15 coins in nickels and quarters. He had 3 more quarters than nickels. How many nickels and quarters does he have?

18.  $a + b = 30$   
 $2a - 3b = 10$

Factor the following trinomials. Then find their solutions/roots/x-intercepts.

19.  $3x^2 + x - 10$

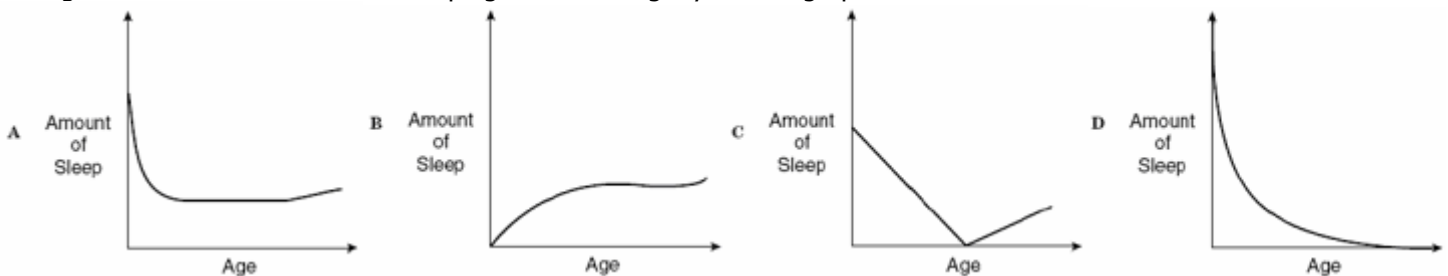
20.  $5x^2 - 13x - 6$

21.  $6x^2 - 11x - 2$

22.  $4x^2 + x - 3$

**Real World Example of Slope:**

23. Gina did a research project on how age affects sleep patterns. She concluded that as people age, they sleep fewer hours until a point in adulthood when the number of hours remains constant. Gina also found that after the age of 70 the amount of time sleeping increases slightly. Which graph best shows the results of Gina's research?



**Review for Pre-AP Test 4-3 (continued)**

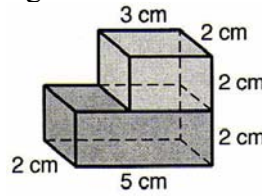
Surface Area, Volume, Dimensional Change, Solids of Rotation, Circles

Name: \_\_\_\_\_

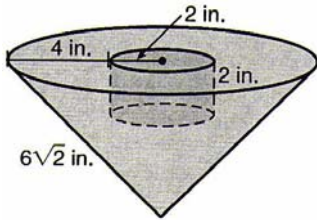
Date: \_\_\_\_\_ Period: \_\_\_\_\_

4. If you cut a 1-inch square out of each corner of an 8.5-by-11-inch piece of paper and fold it into a box without a lid, what is the volume of the container?

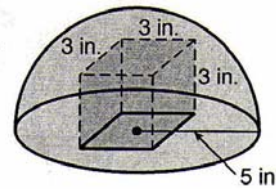
24. Find the surface area and volume of the composite figure.



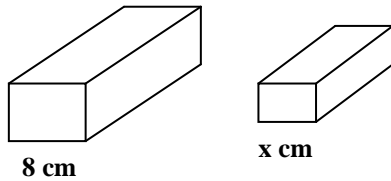
25. Find the surface area and the volume of the composite figure (a cone with a cylinder cut out of it).



28. A hemispherical lollipop has a cube-shaped bubble-gum center. Find the amount of lollipop syrup needed to cover the bubble-gum.

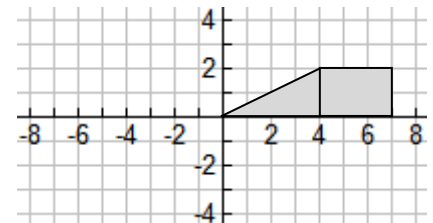


29. The volume of the larger prism is  $128 \text{ cm}^3$  and its surface area is  $80 \text{ cm}^2$ . The volume of the smaller prism is  $54 \text{ cm}^3$ . If the prisms are similar, what is the width ( $x$ ) and surface area of the smaller prism?

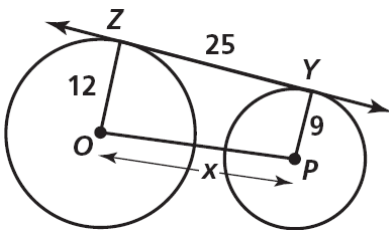


51. Find the volume of the shaded region rotated about the...

- a) x-axis  
b) y-axis

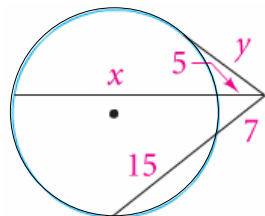


52. a) Find the value of  $x$ .  
b) Extend lines  $ZY$  and  $OP$  until they intersect. Find the distance between the intersection point and  $Y$ .

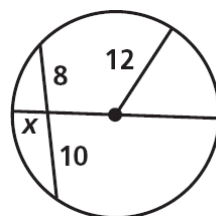


53. Write an equation of a circle that has a diameter with endpoints  $A(-3, 1)$  and  $B(0, 9)$ .

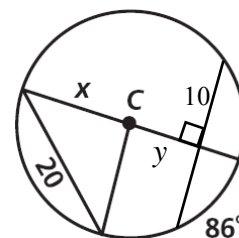
54. Find the values of  $x$  and  $y$ .



55. Find the value of  $x$ .



56. Find the values of  $x$  and  $y$ .



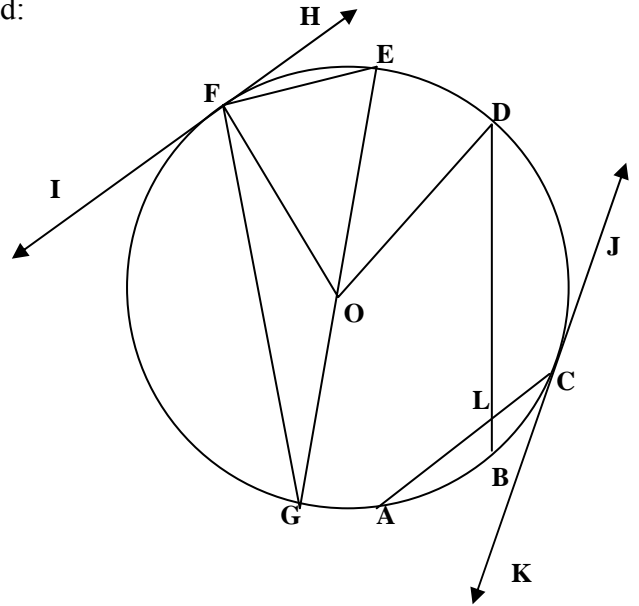
Answers: 4.  $58.5 \text{ in}^3$  24. ? 25. ? 28. ? 29.  $x = 6 \text{ cm}$ ; surface area =  $45 \text{ cm}^2$ . 51. a)  $17\frac{1}{3} \pi \text{ u}^3$ ; b)  $87\frac{1}{3} \pi \text{ u}^3$ .  
52. a)  $\sqrt{634}$ ; b) 75. 53.  $(x + 1.5)^2 + (y - 5)^2 = 18.25$ . 54.  $x = 25.8$ ;  $y = \sqrt{154}$ . 55. 4. 56.  $x = 13.673$ ;  $y = 9.325$ .

**Geometry**  
**Find angles in circles**

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

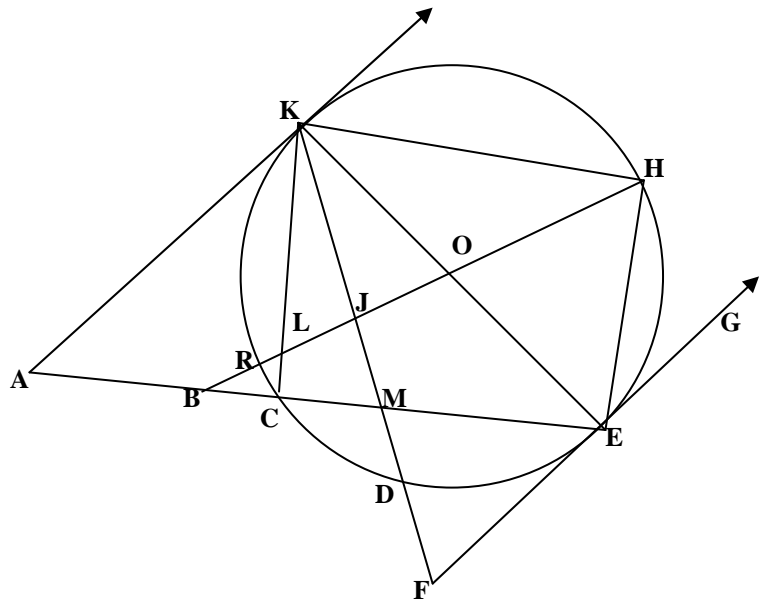
1.  $\overline{GE}$  is a diameter of circle O.  $\overleftrightarrow{IH}$  and  $\overleftrightarrow{KJ}$  are tangents of circle O.  
 $m\widehat{FE}=40$ ,  $m\widehat{ED}=20$ ,  $m\widehat{DC}=76$ ,  $m\widehat{AB}=30$ ,  $m\widehat{GA}=10$ . Find:

- |                          |                          |
|--------------------------|--------------------------|
| (a) $m\angle ALB=$ _____ | (g) $m\angle ACK=$ _____ |
| (b) $m\angle BLC=$ _____ | (h) $m\angle FGE=$ _____ |
| (c) $m\angle JCA=$ _____ | (i) $m\angle EFG=$ _____ |
| (d) $m\angle EOD=$ _____ | (j) $m\angle GFO=$ _____ |
| (e) $m\angle FEG=$ _____ | (k) $m\angle IFG=$ _____ |
| (f) $m\angle FOE=$ _____ | (l) $m\angle HFE=$ _____ |



4.  $\overline{RH}$  and  $\overline{KE}$  are diameters of circle O.  $\overleftrightarrow{FE}$  and  $\overleftrightarrow{AK}$  are tangents.  $m\angle EOH=70$ ,  $m\widehat{CR}=10$ ,  $m\widehat{DE}=60$ . Find:

- |                            |                           |
|----------------------------|---------------------------|
| (a) $m\widehat{RK}=$ _____ | (j) $m\angle KEH=$ _____  |
| (b) $m\widehat{KH}=$ _____ | (k) $m\angle HEG=$ _____  |
| (c) $m\widehat{HE}=$ _____ | (l) $m\angle RHE=$ _____  |
| (d) $m\angle KAE=$ _____   | (m) $m\angle RHK=$ _____  |
| (e) $m\angle HBE=$ _____   | (n) $m\angle HKO=$ _____  |
| (f) $m\angle KCE=$ _____   | (o) $m\angle EKD=$ _____  |
| (g) $m\angle EMD=$ _____   | (p) $m\angle CKD=$ _____  |
| (h) $m\angle KFE=$ _____   | (q) $m\angle K LH=$ _____ |
| (i) $m\angle CEK=$ _____   | (r) $m\angle KJH=$ _____  |



Answers: **#1:** (a) 53 (b) 127 (c) 143 (d) 20 (e) 70 (f) 40 (g) 37 (h) 20 (i) 90 (j) 20 (k) 70 (l) 20. **#4:** (a) 70 (b) 110 (c) 70 (d) 50 (e) 30 (f) 90 (g) 70 (h) 60 (i) 40 (j) 55 (k) 35 (l) 55 (m) 35 (n) 35 (o) 30 (p) 20 (q) 60 (r) 80

## Castle Model

Group Project (double daily grade)

Names: \_\_\_\_\_, \_\_\_\_\_,  
and \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_

Work in groups of 3 to create a model of a castle out of household items. It must include the six different 3-D solids listed below. Tape or glue them together so that the total structure fits on the surface of a student desk. Each team member is responsible for measuring the dimensions of 2 different solids and finding their individual surface areas (exterior surfaces only) and volumes. Show work neatly on notebook paper, staple the work to this cover sheet, and record your answers in the table below. Circle the solids that you were responsible for.

Write the **unit** of measurement that your group used: \_\_\_\_\_

	Height	Slant height	Radius	Perimeter of the base	Area of the base	Volume	Exterior Surface Area (that can be painted)
Rectangular prism		N/A	N/A				
Non-rectangular prism		N/A	N/A				
Pyramid			N/A				
Cylinder		N/A					
Cone				N/A			
Sphere* or hemisphere	N/A	N/A			N/A		

\* Hint for finding the radius of the sphere: you must first find the "perimeter of the base" (the circumference of its great circle).

Calculate the following:

1. Total volume of castle: \_\_\_\_\_ 2. Total surface area of castle: \_\_\_\_\_

If a gallon of paint covers 175 square units and costs \$22.50 a gallon:

3. How many gallons would be required to paint the exterior of the castle? \_\_\_\_\_

Show work here:

4. How much would it cost to paint the exterior of the castle? \_\_\_\_\_

Show work here:

For questions 5-7, show work neatly in the space provided or notebook paper and staple it to this sheet.

5. A museum wants to buy your castle and cover the cone with 5-unit-thick layer of "lava" to make it look like a volcano. How much "lava" will it need? \_\_\_\_\_

A regular triangular prism is cut out of the cylinder's interior. The triangle's sides are the same length as the cylinder's radius. The prism and cylinder have the same height. Assume the cylinder is standing with its base on the ground (and not touching on another solid).

6. How much will the total volume of the cylinder change? \_\_\_\_\_ by \_\_\_\_\_

7. How much will the total exterior surface area of the cylinder change? \_\_\_\_\_ by \_\_\_\_\_

# Reflect-Evaluation

Name: \_\_\_\_\_

1. How did you contribute to the project?
  
2. What did you learn about your topic in the process of developing this project?
  
3. What did you learn about yourself in the process of developing this project?
  
4. What were your group's strengths?
  
5. What were your group's weaknesses?
  
6. What are some of the things that you learned about working with others?
  
7. What would you do better the next time your group works together?
  
8. Rate yourself and each of your group members' level of participation in the project:  
 0 = not enough, 2 = fair, 4 = a lot, 6 = did most of the work.

Name	The solids this person was responsible for	Rating	Explain your rating
		0 2 4 6	
		0 2 4 6	
		0 2 4 6	

If you don't have enough room, write on notebook paper and attach it. Fold this paper in half and turn it in.  
 Grading Rubric (completed by the teacher):

Grade: Group component:	
_____ / 32 points	Measurements and calculations recorded in the table are correct. (1 point each blank)
_____ / 35 points	Answer and work to questions 1-7 are correct. (5 points each)
Grade: Individual component:	
_____ / 16 points	The stapled work for both your solids include (i) a sketch of the solid, (ii) measurements labeled on the sketch, (iii) the formulas used, and (iv) correct work. (2 points each part)
_____ / 5 points	Reflect-Evaluation is completed by you.
_____ / 12 points	Level of participation = your total ratings on your group members' Reflect-Evaluation.
Total grade: _____ / 100 points	

Exercises for Unit 3.1 (chapter 5-5): **Inequalities in Triangles**

76. In  $\triangle EFG$ ,  $m\angle E = 5x + 2$ ,  $m\angle F = 6x - 10$ , and  $m\angle G = x + 20$ . List the angles in order from smallest to largest \_\_\_\_\_, and the sides in order from shortest to longest \_\_\_\_\_.

77. \_\_\_\_\_ Two sides of a triangle have side lengths 8 units and 17 units. Write an inequality that describes the range of lengths that are possible for the third side.



Exercises for Unit 3.1 (chapter 8): **Right Triangles and Trigonometry**

The lengths of three sides of a triangle are given. Describe each triangle as acute, right, or obtuse.

1. \_\_\_\_\_ 14, 48, 50

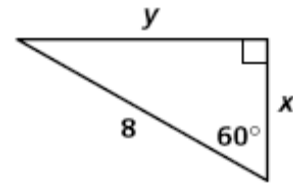
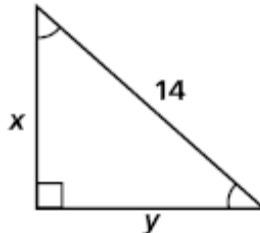
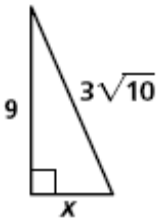
2. \_\_\_\_\_ 6, 7, 9

Find the values of the variables. Leave your answers in simplest radical form.

3.  $x =$  \_\_\_\_\_

4.  $x =$  \_\_\_\_\_  
 $y =$  \_\_\_\_\_

5.  $x =$  \_\_\_\_\_  
 $y =$  \_\_\_\_\_

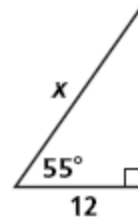
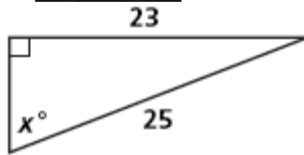


What are the measures of the two congruent angles? \_\_\_\_\_

Find the value of  $x$ . Round lengths of segments to the nearest tenth and angle measures to the nearest degree.

6. \_\_\_\_\_

7. \_\_\_\_\_



8. \_\_\_\_\_ A surveyor measures the top of a building 50 ft away from him. His angle-measuring device is 4 ft above ground. The angle of elevation to the top of the building is  $63^\circ$ . How tall is the building?

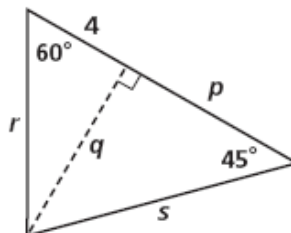
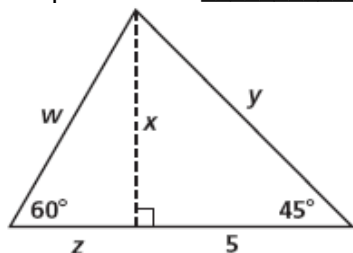
9. \_\_\_\_\_ A forest ranger looking out from a ranger's station can see a forest fire at a  $35^\circ$  angle of depression. The ranger's position is 100 ft above the ground. How far is it from the ranger's station to the fire?

10. \_\_\_\_\_ A moving van traveled 200 mi west, then 70 mi south, then 50 mi east, and finally 100 mi north. Find the distance from the point of origin to the destination (to the nearest mile), and the direction traveled.

Find the value of each variable. Leave your answers in simplest radical form. Then find the perimeter and area of each composite figure.

11.  $w =$  \_\_\_\_\_  $x =$  \_\_\_\_\_  
 $y =$  \_\_\_\_\_  $z =$  \_\_\_\_\_  
perimeter = \_\_\_\_\_

12.  $p =$  \_\_\_\_\_  $q =$  \_\_\_\_\_  
 $r =$  \_\_\_\_\_  $s =$  \_\_\_\_\_  
perimeter = \_\_\_\_\_

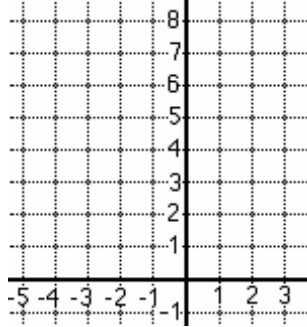


### Exercises for Unit 3.2 (chapter 6): Quadrilaterals

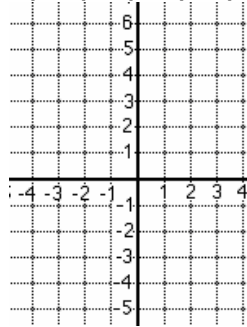


Graph quadrilateral ABCD. Then determine the most precise name for each quadrilateral. Then find the perimeter of each quadrilateral. Leave your answers in simplest radical form.

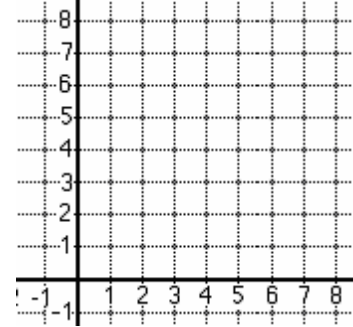
13. Name \_\_\_\_\_  
Perimeter \_\_\_\_\_  
A(2, 3), B(-4, 3), C(-2, 6), D(1, 6)



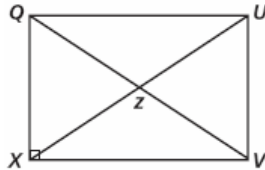
14. Name \_\_\_\_\_  
Perimeter \_\_\_\_\_  
A(0, 6), B(3, 3), C(0, -5), D(-3, 3)



15. Name \_\_\_\_\_  
Perimeter \_\_\_\_\_  
A(0, 4), B(3, 0), C(7, 3), D(4, 7)

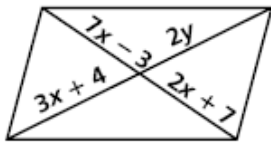


16. \_\_\_\_\_ QUVX is a rectangle with X(-7, -3) and Z(-2, 1). What are the coordinates of U?



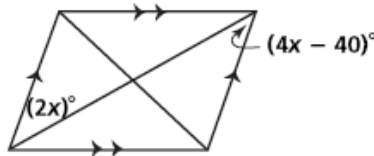
17. Parallelogram

x = \_\_\_\_\_  
y = \_\_\_\_\_



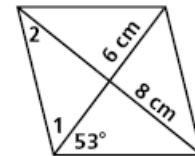
18. Parallelogram

x = \_\_\_\_\_



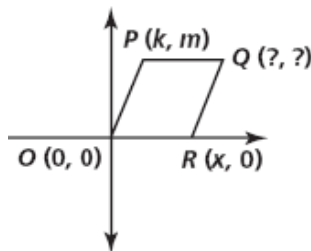
19. Rhombus

∠1 = \_\_\_\_\_, ∠2 = \_\_\_\_\_  
perimeter = \_\_\_\_\_

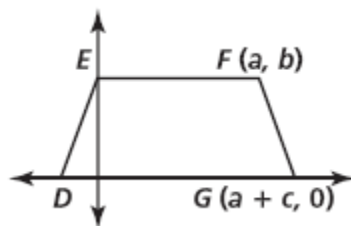


Give the coordinates of the missing points without using any new variables.

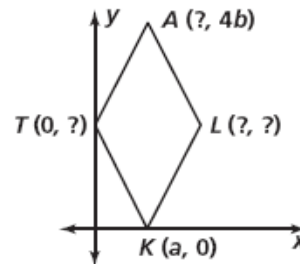
20. Q (\_\_\_\_\_, \_\_\_\_\_)  
Parallelogram



21. D(\_\_\_\_\_, \_\_\_\_\_), E(\_\_\_\_\_, \_\_\_\_\_)  
Isosceles Trapezoid



22. A(\_\_\_\_\_, 4b), L(\_\_\_\_\_, \_\_\_\_\_), T(0, \_\_\_\_\_)  
Rhombus



### Exercises for Unit 3.3 (chapter 10): Area, Perimeter and Circumference



If your answer is not an integer, round to the nearest tenth.

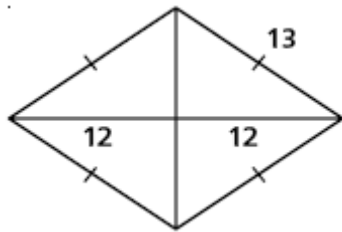
23. \_\_\_\_\_ Find the area of an equilateral triangle with side length of 6 ft.

24. \_\_\_\_\_ Find the area of a regular hexagon with side length of 4 cm.

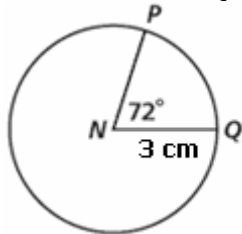
25. \_\_\_\_\_ Find the area of an isosceles triangle with legs each 20 ft long and a base 24 ft long.



26. Area = \_\_\_\_\_

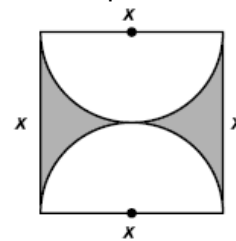


27. Length of arc PQ = \_\_\_\_\_  
Area of sector PNQ = \_\_\_\_\_



in terms of  $\pi$

28. \_\_\_\_\_% Probability that a random point is in shaded region



29. \_\_\_\_\_ Benita plants the same crop in two rectangular fields, each with side lengths in a ratio of 2 : 3. Each dimension of the larger field is 3.5 times the dimension of the smaller field. Seeding the smaller field costs \$8. How much money does seeding the larger field cost?

Find the area of the figures from the following questions above.

30. \_\_\_\_\_ the quadrilateral in question 13

31. \_\_\_\_\_ the quadrilateral in question 14

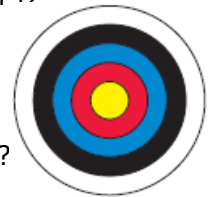
32. \_\_\_\_\_ the quadrilateral in question 15

33. \_\_\_\_\_ the parallelogram in question 20

34. \_\_\_\_\_ the triangle in question 11

35. \_\_\_\_\_ the triangle in question 17

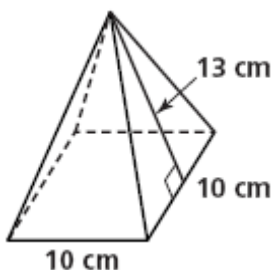
67. \_\_\_\_\_ An archery target with a radius of 61 cm has 5 scoring zones formed by concentric circles. The colors of the zones are yellow, red, blue, black, and white. The radius of the yellow circle is 12.2 cm. The width of each ring is also 12.2 cm. If an arrow hits the target at a random point, what is the probability that it hits the black zone (second zone from the outside)?



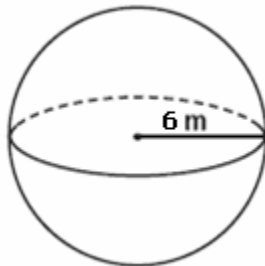
### Exercises for Unit 4.1 (chapter 11): Surface Area and Volume

Find the surface area (SA) and volume (V) of each figure to the nearest tenth.

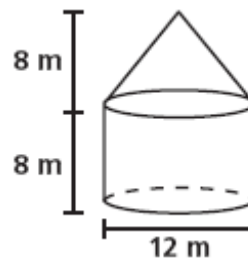
36. SA = \_\_\_\_\_  
V = \_\_\_\_\_



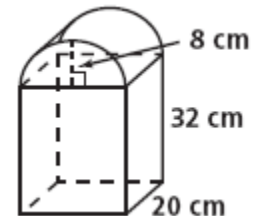
37. SA = \_\_\_\_\_  
V = \_\_\_\_\_



38. SA = \_\_\_\_\_  
V = \_\_\_\_\_



39. SA = \_\_\_\_\_  
V = \_\_\_\_\_



40. \_\_\_\_\_ Two similar cones have heights of 9 cm and 4 cm. Find the ratio of their volumes.

41. a) \_\_\_\_\_ Two cylinders are similar, with surface areas of  $25\pi \text{ cm}^2$  and  $49\pi \text{ cm}^2$ . What is the similarity ratio?

b) \_\_\_\_\_ If the base of the larger cylinder has a circumference of 14 cm, what is the circumference of the smaller cylinder's base?

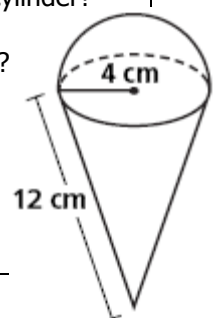
c) \_\_\_\_\_ If the smaller cylinder has a volume of  $50\pi \text{ cm}^3$ , what is the volume of the larger cylinder?

42. a) \_\_\_\_\_, \_\_\_\_\_ What space figures can you use to approximate the shape of the ice cream cone?

b) \_\_\_\_\_ Find the entire figure's surface area to the nearest tenth.

c) \_\_\_\_\_ Find the entire figure's volume to the nearest tenth.

43. \_\_\_\_\_ The "chocolate blast" ice cream cone has a spherical chocolate candy center of radius 3 cm, thus decreasing the amount of ice cream in the cone. What is the new volume of ice cream that the ice cream cone can hold?



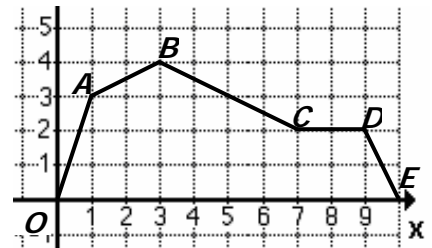
44. \_\_\_\_\_ All the ice cream in a cylindrical carton (with radius 5 cm and height 10 cm) is used to make smaller ice cream cones of  $32.5 \text{ cm}^3$ . How many can be made?

**Exercises for Unit 4.3: TAKS/Algebra, Pre-AP and SAT Topics**



Refer to the function  $f(x)$  on the right. On what open intervals is...

45. a) \_\_\_\_\_  $f(x)$  increasing?  
 b) \_\_\_\_\_  $f(x)$  decreasing?  
 c) \_\_\_\_\_  $f(x)$  constant?
46. a) \_\_\_\_\_ slope of  $f(x)$  increasing?  
 b) \_\_\_\_\_ slope of  $f(x)$  decreasing?  
 c) \_\_\_\_\_ slope of  $f(x)$  constant?



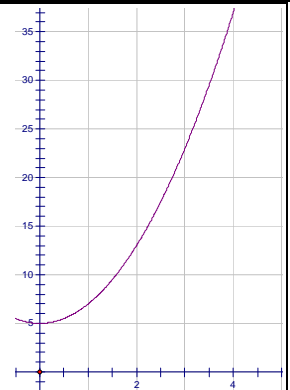
Find the:	... of $f(x)$ for $0 < x < 1$ ( $\overline{OA}$ )	... of $f(x)$ for $1 < x < 3$ ( $\overline{AB}$ )	... of $f(x)$ for $3 < x < 7$ ( $\overline{BC}$ )	... of $f(x)$ for $7 < x < 9$ ( $\overline{CD}$ )	... of $f(x)$ for $9 < x < 10$ ( $\overline{DE}$ )
47. Slope (rise/run)					
48. Equation in slope-intercept form					
49. Length (distance formula or draw a right $\Delta$ )					
50. Area under curve (rectangle, triangle, trapezoid)					

Consider the curve  $y = 2x^2 + 5$  in the interval  $[1, 4]$ .

Approximate the area under the curve in the interval  $[1, 4]$  using:

51. \_\_\_\_\_ a left sum with 3 rectangles  
 52. \_\_\_\_\_ a right sum with 3 rectangles  
 53. \_\_\_\_\_ a sum of 3 trapezoids

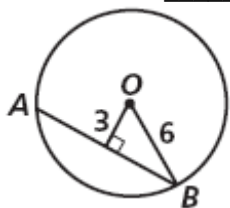
x	y
1	
2	
3	
4	



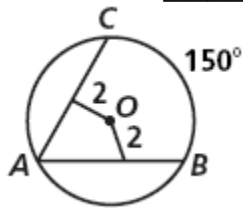
**Exercises for Unit 4.2 (chapter 12): Circles**

Find the measure of arc AB.

54. arc AB = \_\_\_\_\_

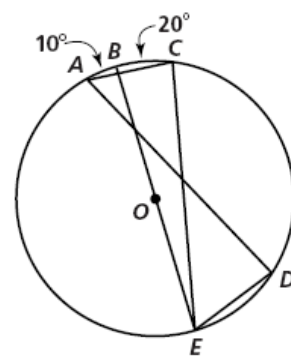


55. arc AB = \_\_\_\_\_



- a.  $m\widehat{AE}$   
 b.  $m\angle C$   
 c.  $m\angle BEC$

56. d.  $m\angle D$



a) \_\_\_\_\_ b) \_\_\_\_\_ c) \_\_\_\_\_ d) \_\_\_\_\_

Find the value of the variable(s). Assume that lines that appear to be tangent are tangent. Round to the tenth.

57. \_\_\_\_\_

58. \_\_\_\_\_

59. \_\_\_\_\_

60. \_\_\_\_\_

61.  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

62. \_\_\_\_\_

63. \_\_\_\_\_

64. \_\_\_\_\_

65. \_\_\_\_\_ Write an equation of the circle that passes through (2, 8) with center (-3, 4).

66.  $x =$  \_\_\_\_\_  $SW =$  \_\_\_\_\_ Find  $x$  and  $SW$  in simplest radical form if  $YW = 5a - 24$ , and  $TW = 3a$ .

Math web sites that may help you as you review for your 2nd semester exam:

[www.purplemath.com](http://www.purplemath.com), [www.coolmath.com](http://www.coolmath.com) (there is a graphing calculator on <http://www.coolmath.com/graphit/>), [www.math.com](http://www.math.com), [www.themathwebsite.com](http://www.themathwebsite.com), and of course your textbook, Pearson Prentice Hall Geometry, online.

This site offers homework video tutors, lesson quizzes, chapter tests, vocabulary quizzes, and real-world applications. The quizzes and tests for chapters 8, 6, 10, 11, 12 will be especially helpful in testing yourself to prepare for the final – and its multiple choice! <http://www.phschool.com/> Enter web code "aue 0775" and click Go.

... and **REVIEW ALL SPRING SEMESTER OLD TESTS!!!**

- |                                                                                                        |                                                                                       |                                                                                                                |                                                     |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 76. $\angle G, \angle E, \angle F$ ; Segments EF, FG, EG.                                              | 14. Kite, perimeter = $6\sqrt{2} + 2\sqrt{73}$ .                                      | 35. (#12) 37.9 units <sup>2</sup> .                                                                            | 48. $y = 3x, y = \frac{1}{2}x + 2.5,$               |
| 77. $9 < x < 25$                                                                                       | 15. Square, perimeter = 20 units.                                                     | 67. 28%.                                                                                                       | $y = -\frac{1}{2}x + 5.5, y = 2,$                   |
| 1. right.                                                                                              | 16. (3, 5).                                                                           | 36. SA = 360 cm <sup>2</sup> , V = 400 cm <sup>3</sup> .                                                       | $y = -2x + 20$ .                                    |
| 2. acute.                                                                                              | 17. $x = 2, y = 5$ .                                                                  | 37. SA = 452.4 cm <sup>2</sup> , V = 904.8 cm <sup>3</sup> .                                                   | 49. $\sqrt{10}, \sqrt{5}, 2\sqrt{5}, 2, \sqrt{5}$ . |
| 3. $x = 3$ .                                                                                           | 18. $x = 20$ .                                                                        | 38. SA = 603.2 m <sup>2</sup> , V = 1206.4 m <sup>3</sup> .                                                    | 50. $1.5 u^2, 7 u^2, 12 u^2, 4 u^2, 1 u^2$ .        |
| 4. $x = 7\sqrt{2}, y = 7\sqrt{2}$ .                                                                    | 19. $\angle 1 = 53^\circ, \angle 2 = 37^\circ,$ perimeter = 40 units.                 | 39. SA = 3327.7 cm <sup>2</sup> , V = 12,250.6 cm <sup>3</sup> .                                               | 51. 43 u <sup>2</sup>                               |
| 5. $x = 4, y = 4\sqrt{3}$ .                                                                            | 20. Q (x + k, m)                                                                      | 40. 729 : 64.                                                                                                  | 52. 73 u <sup>2</sup>                               |
| 6. 67.                                                                                                 | 21. D (-c, 0), E (0, b)                                                               | 41. a) 5: 7. b) 10 cm. c) 137.2 $\pi$ cm <sup>3</sup> $\approx$ 431.0 cm <sup>3</sup> .                        | 53. 58 u <sup>2</sup>                               |
| 7. 20.9.                                                                                               | 22. A(a, 4b), L(2a, 2b), T(0, 2b)                                                     | 42. a) a cone and half of a sphere. b) SA = 207.3 251.3 cm <sup>2</sup> . c) V = 259.7 323.6 cm <sup>3</sup> . | 54. 120.                                            |
| 8. 102 ft.                                                                                             | 23. 15.6 ft <sup>2</sup> .                                                            | 43. <del>146.6</del> 210.5 cm <sup>3</sup> .                                                                   | 55. 105.                                            |
| 9. 143 ft.                                                                                             | 24. 41.6 cm <sup>2</sup> .                                                            | 44. 24 ice cream cones.                                                                                        | 56. a) 170. b) 85. c) 10. d) 85.                    |
| 10. 153 miles northwest.                                                                               | 25. 192 ft <sup>2</sup> .                                                             | 45. a) $0 < x < 1$ and $1 < x < 3$ . b) $3 < x < 7$ and $9 < x < 10$ . c) $7 < x < 9$ .                        | 57. 40.                                             |
| 11. $w = \frac{10\sqrt{3}}{3}, x = 5, y = 5\sqrt{2}, z = \frac{5\sqrt{3}}{3},$                         | 26. 120 units <sup>2</sup> .                                                          | 46. a) none. b) none. c) all of them: $0 < x < 1, 1 < x < 3, 3 < x < 7, 7 < x < 9,$ and $9 < x < 10$ .         | 58. 115.                                            |
| perimeter = $5 + 5\sqrt{2} + 5\sqrt{3}$ .                                                              | 27. arc length $1.2\pi \approx 3.8$ cm, sector $1.8\pi \approx 5.7$ cm <sup>2</sup> . | 47. $3, \frac{1}{2}, -\frac{1}{2}, 0, -2$ .                                                                    | 59. 80.                                             |
| 12. $p = 4\sqrt{3}, q = 4\sqrt{3}, r = 8,$ $s = 4\sqrt{6},$ perimeter = $12 + 4\sqrt{3} + 4\sqrt{6}$ . | 28. 21.5%.                                                                            |                                                                                                                | 60. 44.                                             |
| 13. Trapezoid, perimeter = $9 + \sqrt{10} + \sqrt{13}$ units.                                          | 29. \$98.                                                                             |                                                                                                                | 61. $x = 45, y = 15$ .                              |
|                                                                                                        | 30. (#13) 13.5 units <sup>2</sup> .                                                   |                                                                                                                | 62. 5.5.                                            |
|                                                                                                        | 31. (#14) 33 units <sup>2</sup> .                                                     |                                                                                                                | 63. 6.                                              |
|                                                                                                        | 32. (#15) 25 units <sup>2</sup> .                                                     |                                                                                                                | 64. 11.8.                                           |
|                                                                                                        | 33. (#20) Area = $x \cdot m$ .                                                        |                                                                                                                | 65. $(x + 3)^2 + (y - 4)^2 = 41$ .                  |
|                                                                                                        | 34. (#11) 19.7 units <sup>2</sup> .                                                   |                                                                                                                | 66. $x = 4\sqrt{3}, SW = 36 + 4\sqrt{3}$ .          |

GOOD LUCK!!!