



Arkansas Comprehensive Testing, Assessment, and Accountability Program

# Released Item Booklet

## Geometry End-of-Course Examination

### April 2006 Administration

---

This document is the property of the Arkansas Department of Education, and all rights of this document are reserved by the Arkansas Department of Education. Arkansas public schools may reproduce this document in full or in part for use with teachers, students, and parents. All other uses of this document are forbidden without written permission from the Arkansas Department of Education. All inquiries should be sent to Dr. Gayle Potter at the Arkansas Department of Education, 501-682-4558.

**Arkansas Department of Education**

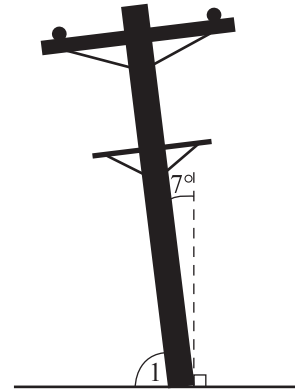
**PART II Released Items – 2006 Geometry**

1. A prime number is a whole number greater than 1 that is divisible only by 1 and the number itself. The number 37 is divisible only by 1 and 37. Therefore, 37 is a prime number.

What type of reasoning does this show?

- A. composite reasoning  
\* B. deductive reasoning  
C. inductive reasoning  
D. prime reasoning
2. A 225-mile bike relay had 5 sections. Marlene rode the 75 to 120 mile section. Water stops were located at the halfway point of each section. Where could Marlene have expected to see a water stop on her portion of the race?
- A. 82.5 mile mark  
B. 90.0 mile mark  
\* C. 97.5 mile mark  
D. 112.5 mile mark
3. Dan put a fence around his rectangular garden. The garden is 50 feet long and 35 feet wide. How many feet of fencing did Dan use?
- A. 85  
B. 160  
\* C. 170  
D. 1,750

Use the figure below to answer question 4.



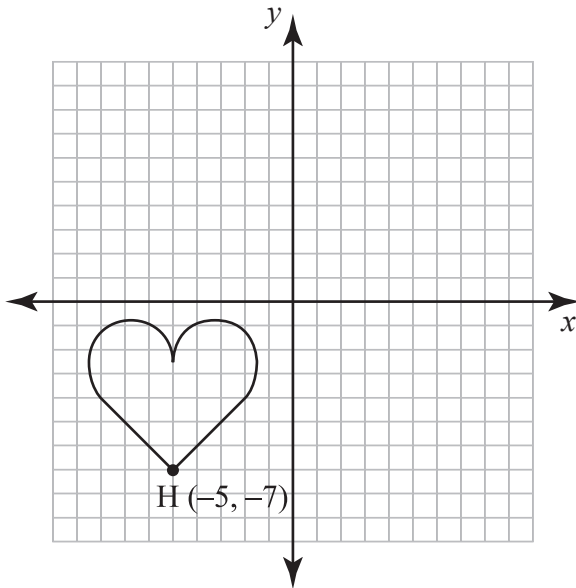
(Not drawn to scale.)

4. A pole sits on level ground. The pole is leaning  $7^\circ$  to the left of vertical, as shown in the drawing. What is the measure of  $\angle 1$ ?
- \* A.  $83^\circ$   
B.  $93^\circ$   
C.  $97^\circ$   
D.  $107^\circ$
5. The following information is known about the quadrilateral ABCD:
- $\overline{BC}$  is parallel to  $\overline{AD}$ .
  - $\overline{AB}$  is not congruent to  $\overline{CD}$ .
  - $\angle CDA$  is a right angle.

Which must be true of quadrilateral ABCD?

- A. ABCD is a rhombus.  
B. ABCD is a rectangle.  
\* C. ABCD is a trapezoid.  
D. ABCD is a parallelogram.

Use the graph below to answer question 6.



6. The point of the heart (H) has a coordinate of  $(-5, -7)$  as shown above. The heart is reflected over the  $y$ -axis and then reflected over the  $x$ -axis. After both reflections, what are the coordinates of the point H?

- A.  $(-5, -7)$
- B.  $(-5, 7)$
- C.  $(5, -7)$
- \* D.  $(5, 7)$

7. A cylinder-shaped carton of ice cream is cut by a plane that is **perpendicular** to the bases. What is the shape of the cross-section?

- A. circle
- B. ellipse
- \* C. rectangle
- D. triangle

8. Which shows deductive reasoning?

- A. The last 5 times Ben ate pizza he had a headache the next day. Therefore, pizza makes Ben have headaches.
- \* B. Fluoride in the drinking water reduced the chance of having cavities. Therefore, the chance of Ben having cavities is less because his drinking water contains fluoride.
- C. The teacher has returned the quizzes on Thursday in each of the last 5 weeks. Therefore, Ben's quiz for this week will be returned on Thursday.
- D. Ben earned 100% on his last 3 assignments. Therefore, he will earn 100% on the next assignment.

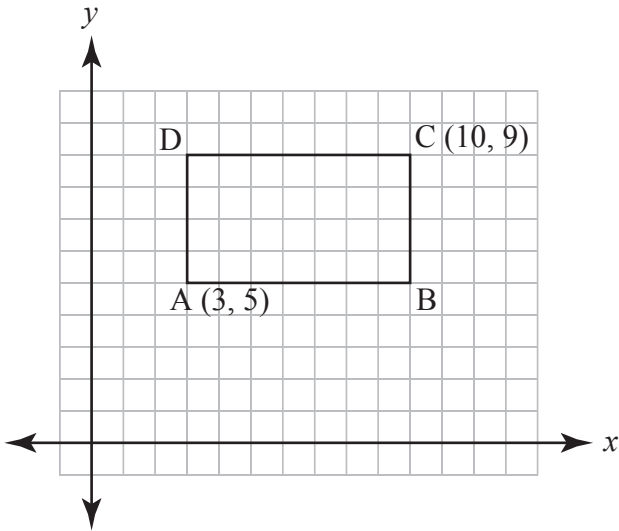
9. Aluminum, iron, oxygen, and silicon are the most common elements present in Earth's crust.

- There is less aluminum in Earth's crust than oxygen.
- There is more silicon in Earth's crust than aluminum.
- There is less iron in Earth's crust than aluminum.
- There is more oxygen in Earth's crust than silicon.

What is the correct order from the smallest amount to the largest amount of these elements present in Earth's crust?

- \* A. iron, aluminum, silicon, oxygen
- B. iron, aluminum, oxygen, silicon
- C. aluminum, iron, silicon, oxygen
- D. iron, silicon, aluminum, oxygen

Use the graph below to answer question 10.



10. The graph above represents the floor of a new building. A straight electric cable will be placed from A to C. What is the length of the electric cable to the nearest tenth unit?

- A. 5.8 units
- \* B. 8.1 units
- C. 13.5 units
- D. 19.1 units

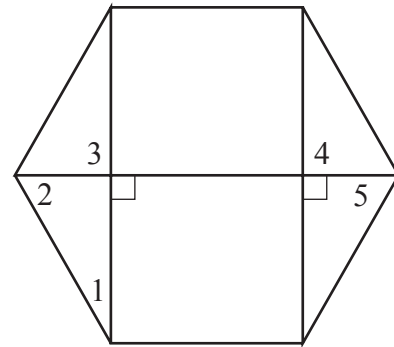
11. Ceres, Hygiea, Pallas, and Vesta are all asteroids.

- Ceres has a larger radius than Pallas.
- Hygiea has a smaller radius than Vesta.
- Pallas has a larger radius than Vesta.

What is the correct order from smallest radius to largest radius?

- A. Hygiea, Pallas, Vesta, Ceres
- \* B. Hygiea, Vesta, Pallas, Ceres
- C. Vesta, Hygiea, Pallas, Ceres
- D. Vesta, Pallas, Hygiea, Ceres

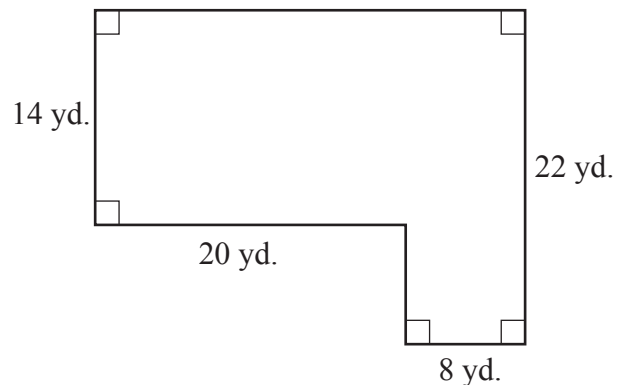
Use the figure below to answer question 12.



12. Which 2 angles in the regular hexagon above are supplementary?

- A.  $\angle 1$  and  $\angle 2$
- B.  $\angle 1$  and  $\angle 5$
- C.  $\angle 2$  and  $\angle 5$
- \* D.  $\angle 3$  and  $\angle 4$

Use the figure below to answer question 13.

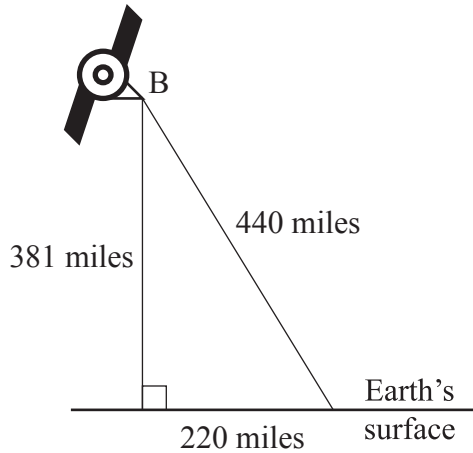


(Not drawn to scale.)

13. What is the area of the parking lot shown above?

- A. 100 yd.<sup>2</sup>
- B. 280 yd.<sup>2</sup>
- \* C. 456 yd.<sup>2</sup>
- D. 616 yd.<sup>2</sup>

Use the following diagram to answer question 14.



(Not drawn to scale.)

14. The diagram shows the distance of a satellite from Earth's surface. Which represents  $\cos B$ ?

- A. 0.5000
- B. 0.5774
- \* C. 0.8659
- D. 1.1549

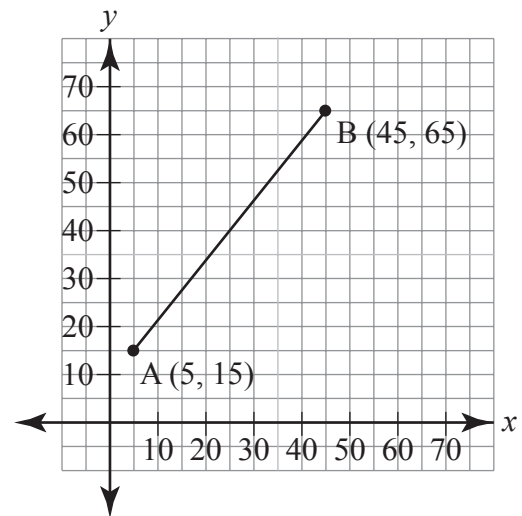
15. The diameter of a skateboard wheel is 60 mm. What is the circumference of the skateboard wheel to the nearest millimeter? Use  $\pi = 3.14$ .

- \* A. 188 mm
- B. 377 mm
- C. 2,826 mm
- D. 5,652 mm

16. A window is the shape of a hexagon. What is the sum of the interior angles of the window?

- A.  $180^\circ$
- B.  $540^\circ$
- \* C.  $720^\circ$
- D.  $1,080^\circ$

Use the graph below to answer question 17.



17. A television weather station is tracking a storm moving from point A to point B as shown on the graph above. The storm will be at the midpoint of  $\overline{AB}$  in 10 minutes. What are the coordinates of the midpoint of  $\overline{AB}$ ?

- A. (20, 25)
- \* B. (25, 40)
- C. (30, 35)
- D. (40, 25)

**PART II Released Items – 2006 Geometry**

Use the equations below to answer question 18.

I

$$y = -2x + 4$$

II

$$y = -2x + 2$$

III

$$y = -\frac{1}{2}x + 1$$

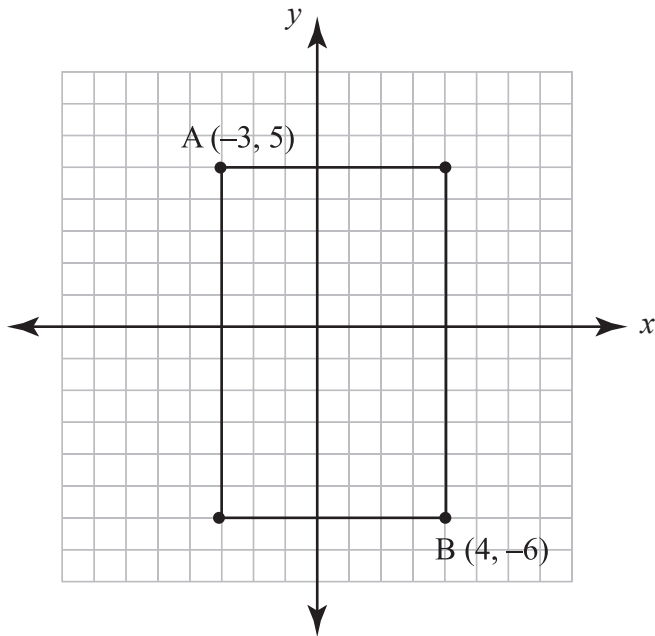
IV

$$y = \frac{1}{2}x + 3$$

18. Which 2 lines are **parallel**?

- \* A. I and II
- B. I and IV
- C. II and III
- D. II and IV

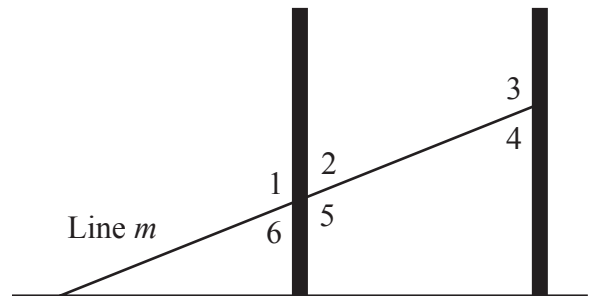
Use the graph below to answer question 19.



19. Which expression will calculate the length of  $\overline{AB}$ ?

- \* A.  $\sqrt{(-3-4)^2 + (5-(-6))^2}$
- B.  $\sqrt{(-3-5)^2 + (4-(-6))^2}$
- C.  $\sqrt{(-3+4)^2 + (5+(-6))^2}$
- D.  $\sqrt{(-3+5)^2 + (4+(-6))^2}$

Use the figure below to answer question 20.



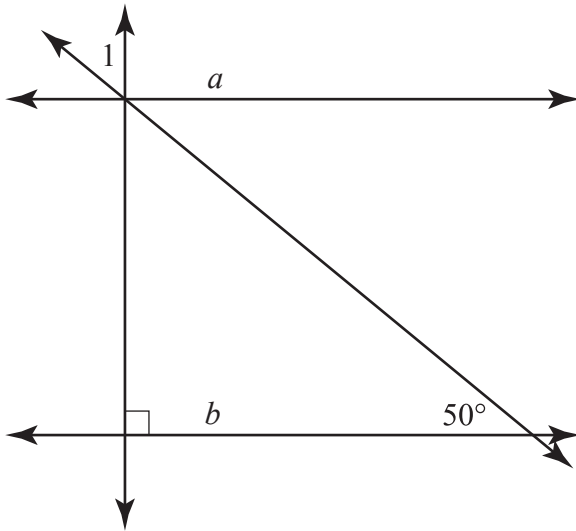
20. Line  $m$  represents a straight wire attached to 2 parallel telephone poles as shown above. Which statement is true?

- A.  $\angle 2 \cong \angle 3$
- B.  $\angle 3 + \angle 5 = 180^\circ$
- C.  $\angle 4 + \angle 6 = 180^\circ$
- \* D.  $\angle 5 \cong \angle 3$

21. Shari, Millie, and Sally are sisters. Shari is 3 years older than Millie. Millie is 5 years older than Sally. What can you conclude using deductive reasoning?

- \* A. Shari is 8 years older than Sally.
- B. Shari is the oldest child in her family.
- C. Sally is the youngest in her family.
- D. Shari is 8 years old.

Use the figure below to answer question 22.

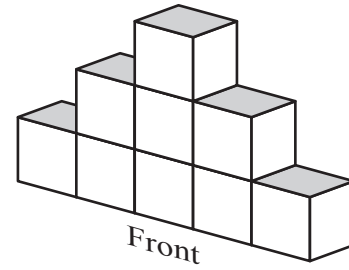


(Not drawn to scale.)

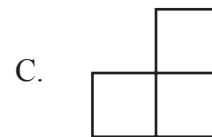
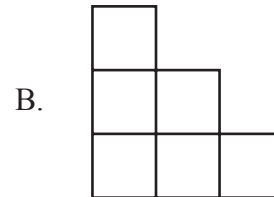
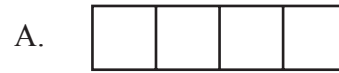
22. Line  $a$  and line  $b$  are parallel. Using the figure above, what is the measurement of  $\angle 1$ ?

- \* A.  $40^\circ$
- B.  $50^\circ$
- C.  $130^\circ$
- D.  $140^\circ$

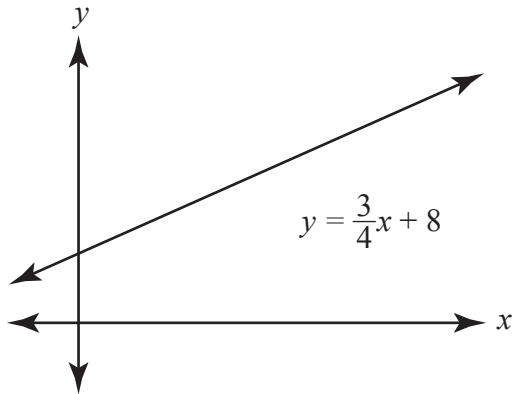
Use the figure below to answer question 23.



23. A 3-dimensional drawing is shown. Which could be 1 of the views?



Use the graph below to answer question 24.



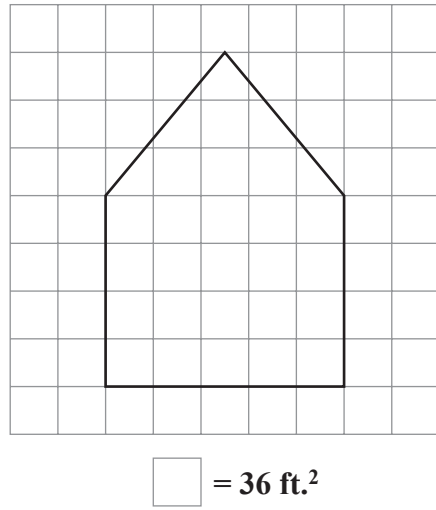
24. Joel is laying out a maze for the city park. The graph above shows the location and equation of a row of bushes for the maze. A row of hay bales will be **perpendicular** to the row of bushes. Which equation could represent the row of hay bales?

- \* A.  $y = -\frac{4}{3}x + 5$
- B.  $y = -\frac{3}{4}x + 6$
- C.  $y = \frac{3}{4}x + 3$
- D.  $y = \frac{4}{3}x + 2$

25. A cube measures  $\frac{1}{2}$  in. along each edge. What is the volume of the cube?

- \* A.  $\frac{1}{8}$  in.<sup>3</sup>
- B.  $\frac{1}{4}$  in.<sup>3</sup>
- C.  $\frac{3}{4}$  in.<sup>3</sup>
- D.  $1\frac{1}{2}$  in.<sup>3</sup>

Use the figure below to answer question 26.



26. A scale drawing of the side of a house is shown above. What is the best estimate of the area of the side of the house?

- A. 700 ft.<sup>2</sup>
- B. 850 ft.<sup>2</sup>
- \* C. 1,000 ft.<sup>2</sup>
- D. 1,250 ft.<sup>2</sup>

Use the information below to answer question 27.

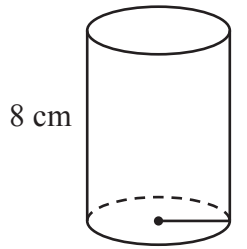
- Diane, Elena, and Felicity all play outfield positions on their high school softball team.
- The positions they play are, in no particular order, right field, center field, and left field.
- Diane does not play right field.
- Elena plays left field.

27. Which statement is true?

- \* A. Diane plays center field.
- B. Elena plays right field.
- C. Felicity plays left field.
- D. Felicity does not play right field.



Use the figure below to answer question 28.



radius = 3 cm

(Not drawn to scale.)

28. Another cylinder has a height 1.5 cm less than the cylinder shown above. What is the difference between the volumes of the 2 cylinders? Use  $\pi = 3.14$ .

- A.  $10.60 \text{ cm}^3$
- B.  $14.13 \text{ cm}^3$
- C.  $28.26 \text{ cm}^3$
- \* D.  $42.39 \text{ cm}^3$

29. There are 4 different radio stations—KAWE, KNEW, KRAH, KWON—which broadcast at 4 different frequencies: 88.5, 90.1, 95.7, and 104.3.

- Neither 88.5 nor 104.3 is the broadcast frequency for KRAH.
- KWON has a higher broadcast frequency than KNEW.
- KAWE has a frequency of 90.1.

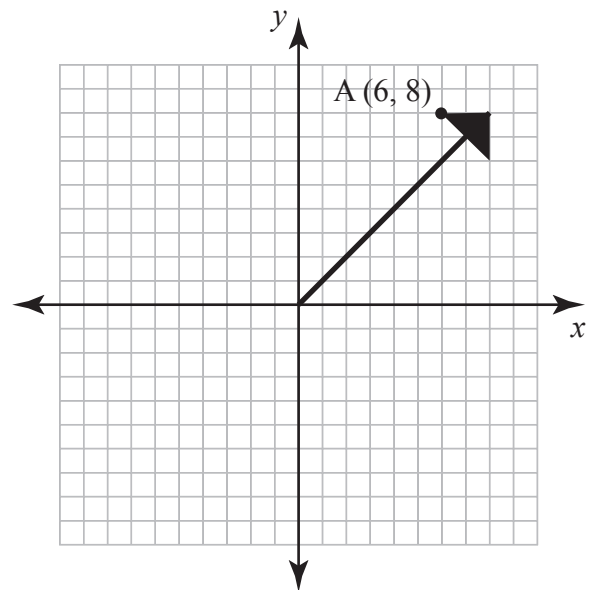
What station broadcasts at the frequency of 95.7?

- A. KAWE
- B. KNEW
- \* C. KRAH
- D. KWON

30. A building has a flat roof. The roof is shaped like a trapezoid. What is the sum of the interior angles of the roof?

- A.  $180^\circ$
- \* B.  $360^\circ$
- C.  $540^\circ$
- D.  $720^\circ$

Use the graph below to answer question 31.

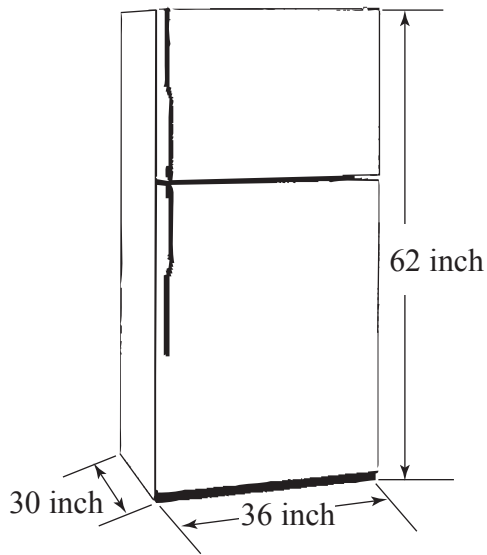


31. The arrow above represents the needle on a compass. The needle is rotated  $180^\circ$  in the clockwise direction. What are the coordinates of point A after the rotation?

- A.  $(-8, -6)$
- B.  $(-8, 6)$
- \* C.  $(-6, -8)$
- D.  $(6, -8)$

Use the figure below to answer question 32.

Frances' Old Refrigerator



(Not drawn to scale.)

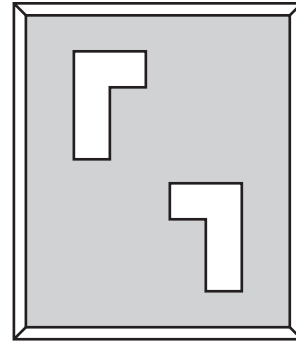
32. Frances bought a new refrigerator to replace her old refrigerator shown above. Her new refrigerator has the same length and width as the old refrigerator, but is 8 inches higher. How many more cubic inches of space are in Frances's new refrigerator compared to her old refrigerator?

- \* A. 8,640
- B. 14,880
- C. 17,856
- D. 25,440

33. There are 28 students in Jay's class. Of these 28 students, 16 have a dog, 7 have a cat, and 11 have neither a dog nor a cat. How many students have both a dog and a cat?

- A. 1
- \* B. 6
- C. 10
- D. 17

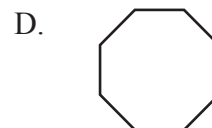
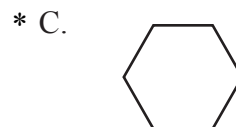
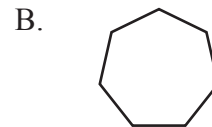
Use the figure below to answer question 34.



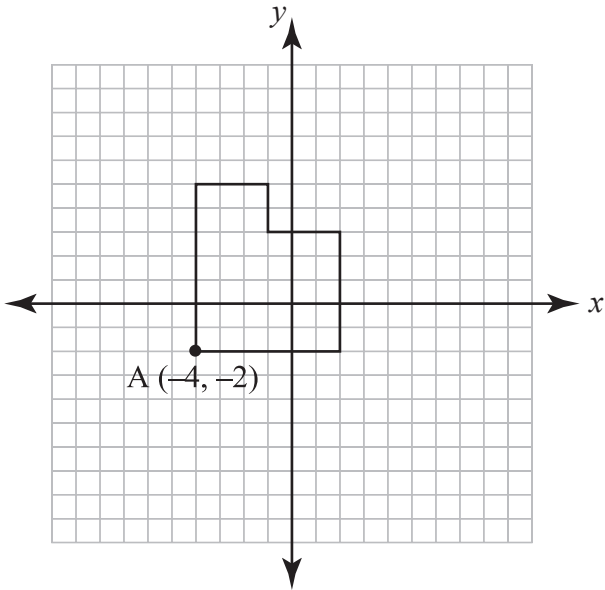
34. Donna describes the piece of artwork shown above. Which is the most accurate description of this artwork?

- \* A. One shape reflects and translates onto the other.
- B. One shape rotates onto the other.
- C. One shape reflects onto the other.
- D. One shape rotates and translates onto the other.

35. Carmen chooses tiles to cover the floor. All the tiles are regular polygons. Which tile shape will tessellate the space?



Use the graph below to answer question 36.



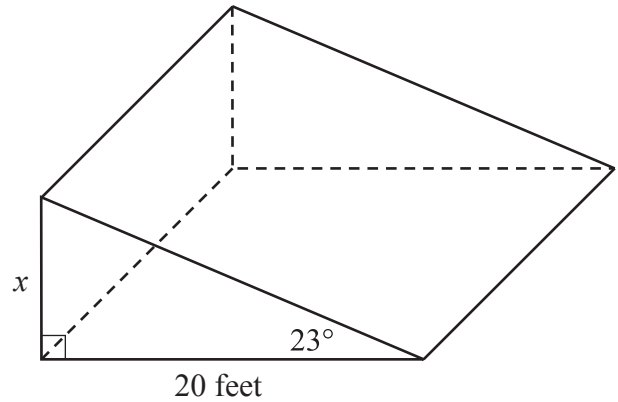
36. The polygon above is the mapping of a school building. What translation rule moves point A to the point  $(0, 0)$ ?

- \* A.  $(x, y) \rightarrow (x + 4, y + 2)$
- B.  $(x, y) \rightarrow (x + 2, y + 4)$
- C.  $(x, y) \rightarrow (x - 4, y - 2)$
- D.  $(x, y) \rightarrow (x + 0, y + 0)$

37. Which type of triangle has 2 angles that measure  $60^\circ$ ?

- \* A. equilateral
- B. obtuse
- C. right
- D. scalene

Use the figure below to answer question 38.



(Not drawn to scale.)

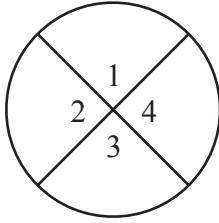
38. Keith is building a roof for a shed as shown above. What is the height of the tallest part of Keith's roof ( $x$ ), rounded to the nearest tenth of a foot?

- A. 7.8
- \* B. 8.5
- C. 18.4
- D. 21.7

39. The diameter of 1 circular garden is 20 feet. The diameter of another circular garden is 10 feet. How much smaller is the circumference of the smaller garden? Use  $\pi = 3.14$ .

- \* A. 31.4 feet
- B. 62.8 feet
- C. 235.5 feet
- D. 942.0 feet

Use the figure below to answer question 40.



(Not drawn to scale.)

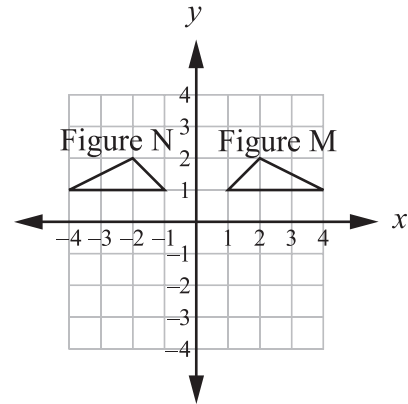
40. Mari created the circular window represented above. She knew that  $\angle 1$  and  $\angle 2$  were supplementary and that  $\angle 1 \cong \angle 3$  because they were vertical angles. What **must** be true about  $\angle 2$  and  $\angle 3$ ?

- A.  $\angle 2 \cong \angle 3$
- B.  $\angle 2$  is complementary to  $\angle 3$
- \* C.  $\angle 2$  is supplementary to  $\angle 3$
- D.  $\angle 2$  and  $\angle 3$  are both right angles

41. Which is the equation of a line that is **parallel** to the line that passes through  $(6, -1)$  and  $(9, 1)$ ?

- A.  $y = -\frac{3}{2}x + 1$
- B.  $y = -\frac{2}{3}x + 2$
- \* C.  $y = \frac{2}{3}x + 3$
- D.  $y = \frac{3}{2}x + 4$

Use the diagram below to answer question 42.



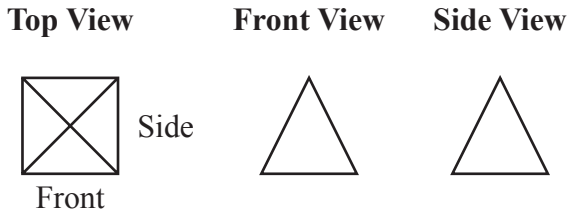
42. Which transformation describes the change from Figure M to Figure N?

- A. dilation
- \* B. reflection
- C. rotation
- D. translation

43. A cereal box is 10.4 inches high, 7.4 inches long, and 2.3 inches wide. What is the volume of the cereal box rounded to the nearest cubic inch?

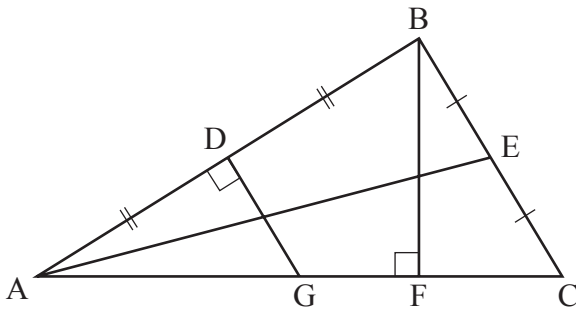
- A. 77
- B. 140
- \* C. 177
- D. 236

Use the figures below to answer question 44.



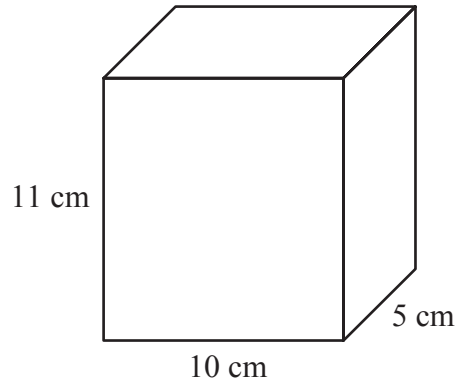
44. The figures above show the top, front, and side view of a polyhedron. What type of polyhedron is it?
- A. square prism
  - \* B. square pyramid
  - C. triangular prism
  - D. triangular pyramid

Use the figure below to answer question 45.



45. A city built a playground on a triangular shaped section of land represented by  $\triangle ABC$  in the figure above. A sidewalk forms an altitude of the triangle. Which segment must be an altitude of  $\triangle ABC$ ?
- A.  $\overline{AB}$
  - B.  $\overline{AE}$
  - \* C.  $\overline{BF}$
  - D.  $\overline{DG}$

Use the figure below to answer question 46.



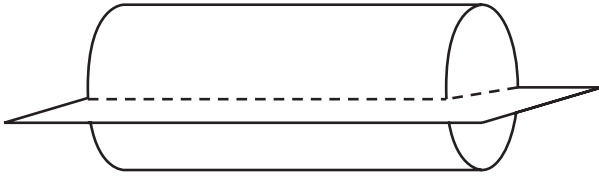
(Not drawn to scale.)

46. A company is planning to sell juice in boxes represented by the figure shown above. What is the total surface area of the box?
- A.  $330 \text{ cm}^2$
  - B.  $380 \text{ cm}^2$
  - \* C.  $430 \text{ cm}^2$
  - D.  $550 \text{ cm}^2$

Use the information below to answer question 47.

- Vi has quarters, dimes, and nickels in her purse.
  - The number of each type of coin is 3, 6, and 9 in no particular order.
  - There are more dimes than quarters.
  - There are 3 nickels in Vi's purse.
47. Which statement is true?
- \* A. The dimes total \$0.90.
  - B. The quarters total \$2.25.
  - C. There are more nickels than quarters.
  - D. There are twice as many dimes as nickels.

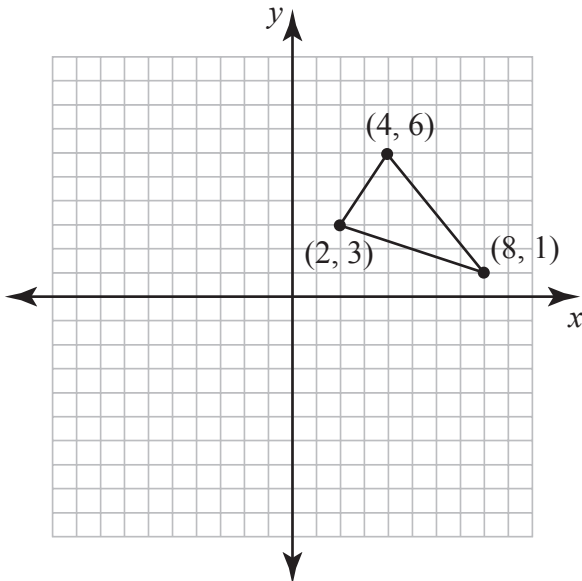
Use the figure below to answer question 48.



48. Cindi emptied the frozen apple juice from a can. She then cut the frozen juice horizontally as shown in the figure above. What shape did Cindi see along her cut?

- A. circle
- B. cylinder
- \* C. rectangle
- D. sphere

Use the graph below to answer question 49.



49. Sacha planned a fabric design by reflecting the triangle shown above over the  $x$ -axis. Which list of coordinates represents the vertices of the triangle reflected over the  $x$ -axis?

- A.  $(-2, -3), (-4, -6), (-8, 1)$
- B.  $(-2, 3), (-4, 6), (-8, 1)$
- \* C.  $(2, -3), (4, -6), (8, -1)$
- D.  $(3, 2), (6, 4), (1, 8)$

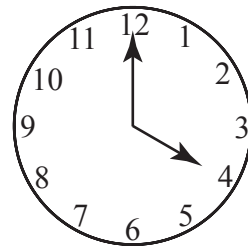
50. Brazil, Canada, Russia, and the United States all have large forest regions.

- The area of Brazil’s forests is larger than the area of Canada’s forests.
- The area of Canada’s forests is larger than the area of the United States’ forests.
- The area of Brazil’s forests is smaller than the area of Russia’s forests.

What is the correct order that lists the countries from largest forest area to the smallest forest area?

- A. Russia, Brazil, United States, Canada
- B. Russia, Canada, Brazil, United States
- C. Brazil, Russia, Canada, United States
- \* D. Russia, Brazil, Canada, United States

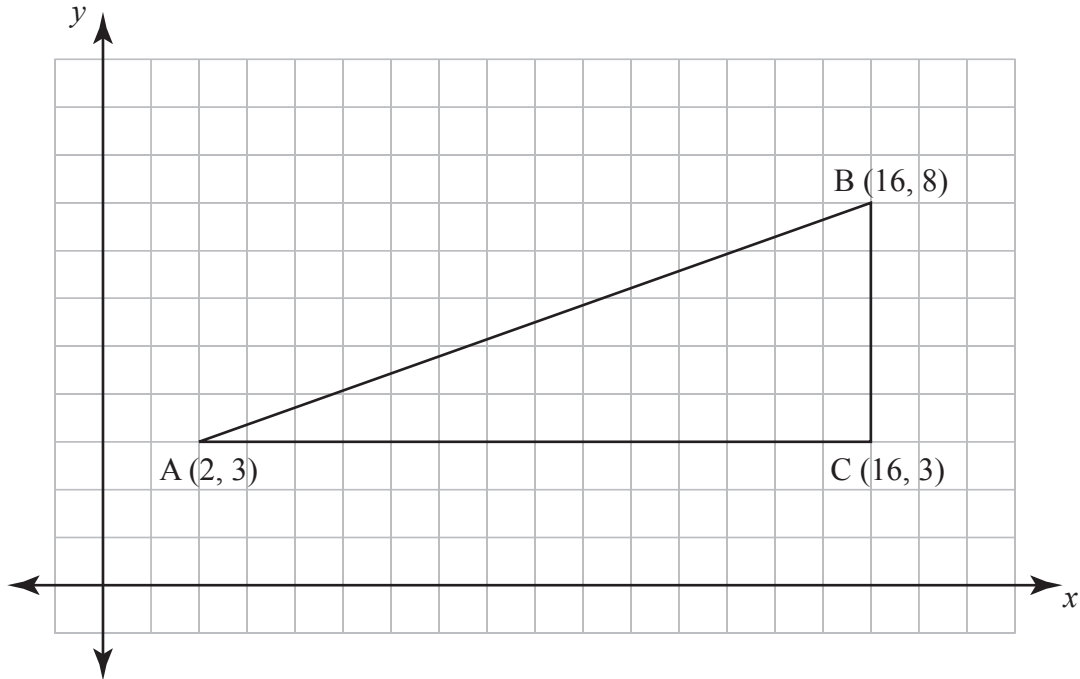
Use the figure below to answer question 51.



51. The minute hand on a clock points directly at 12. The hour hand points directly at 4. What is the measure of the smallest arc determined by the 2 hands?

- A.  $60^\circ$
- \* B.  $120^\circ$
- C.  $150^\circ$
- D.  $240^\circ$

Use the graph below to answer question 52.



52. The triangle shown above represents a bike ramp Nate is building. He adds a straight support from point C to the midpoint of  $\overline{AB}$ . What are the coordinates of the midpoint of  $\overline{AB}$ ?
- A. (7, 2.5)
  - B. (8, 4)
  - C. (9, 3)
  - \* D. (9, 5.5)

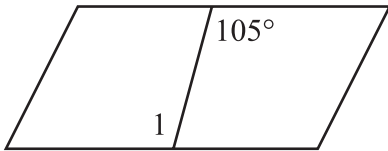
53. Mary is making a scale drawing of her bedroom. The actual length of the room is 12 feet. Mary uses a scale of 3 feet : 2 inches. What will be the length of Mary's drawing?
- A. 6 inches
  - \* B. 8 inches
  - C. 11 inches
  - D. 18 inches

54. How much paper is needed to cover a rectangular bulletin board that is 29 in. wide and 37 in. high?
- A. 132 in.<sup>2</sup>
  - B. 536.5 in.<sup>2</sup>
  - C. 957 in.<sup>2</sup>
  - \* D. 1,073 in.<sup>2</sup>

55. Ben will be painting a mural on the wall of a building. He wants to use the shape of a regular polygon that can form a tessellation. Which polygon could Ben use?

- A. heptagon
- \* B. hexagon
- C. octagon
- D. pentagon

Use the figure below to answer question 56.



(Not drawn to scale.)

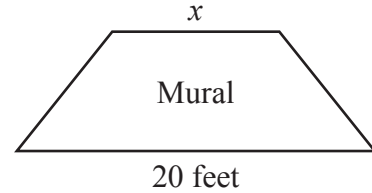
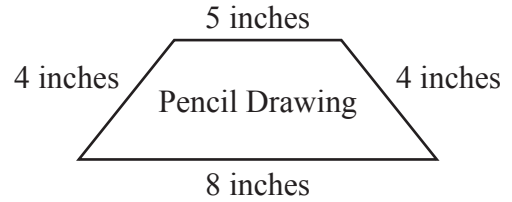
56. The pathway surrounding a playground forms a parallelogram. Another path cuts across the playground as shown above. What is the measure of  $\angle 1$ ?

- A.  $75^\circ$
- B.  $85^\circ$
- \* C.  $105^\circ$
- D.  $115^\circ$

57. A box of tissues measures 4.5 inches wide, 4 inches high, and 9.5 inches long. What is the surface area of the box to the nearest square inch?

- A. 99
- B. 171
- \* C. 198
- D. 342

Use the figures below to answer question 58.



(Not drawn to scale.)

58. A trapezoid is being copied from a pencil drawing to a wall-sized mural. What is the length of the side marked  $x$  on the mural?

- A. 10.5 feet
- \* B. 12.5 feet
- C. 17 feet
- D. 32 feet

59. What is the process of using a rule to make a specific conclusion called?

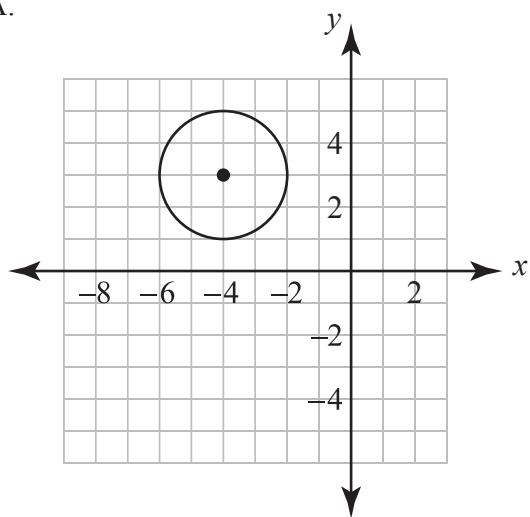
- \* A. deductive reasoning
- B. hypothesis testing
- C. inductive reasoning
- D. intuitive reasoning



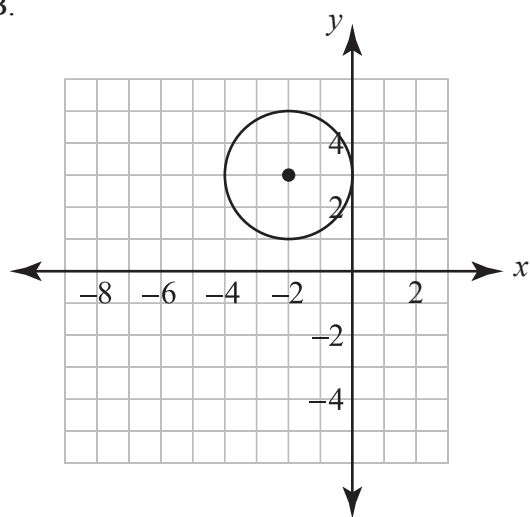
**PART II Released Items – 2006 Geometry**

60. The equation of a circle is  $(x + 2)^2 + (y + 3)^2 = 4$ . Which represents this equation?

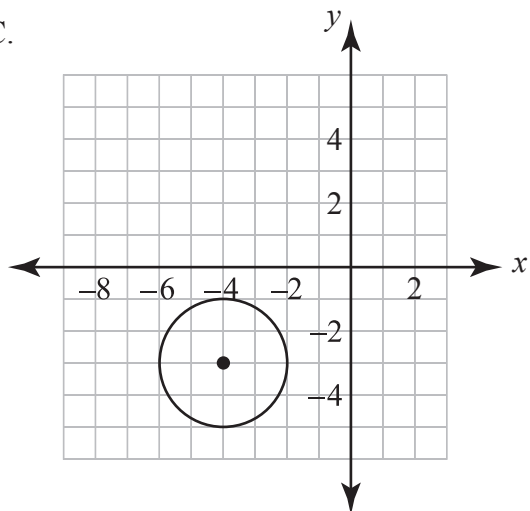
A.



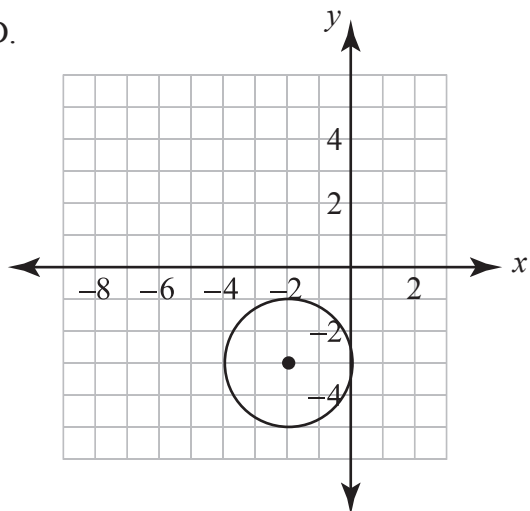
B.



C.



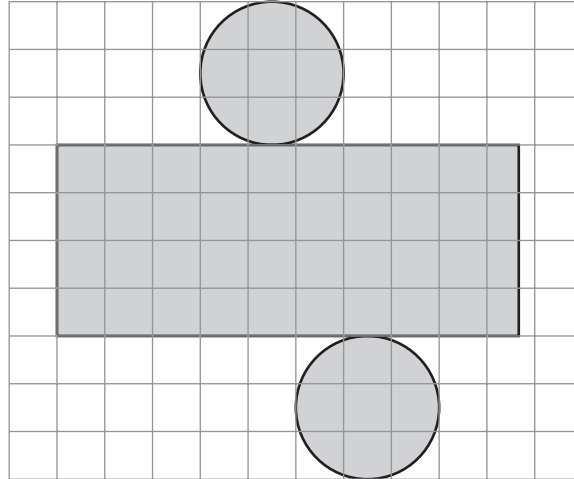
\* D.



**PART II Released Items – 2006 Geometry**

**GEOMETRY OPEN-RESPONSE ITEM A**

- A. A company makes storage containers. A cylindrical barrel is 1 type of container. A 2-dimensional view (net) of the barrel is shown below.



(1 unit represents 1 foot.)

1. What is the volume of the cylindrical barrel the company makes? Show or explain all of your work even if you use mental math or a calculator. Use  $\pi = 3.14$ .
2. The company also makes boxes shaped like rectangular prisms. One storage box is 3 feet high, 5 feet long, and 2 feet wide. On the grid in your answer document, draw a 2-dimensional view (net) of the box.
3. What is the volume of the box the company makes? Show or explain all of your work even if you use mental math or a calculator.

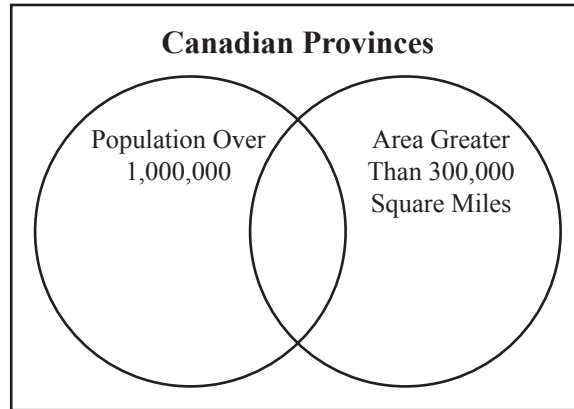
BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

**RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM A**

<b>SCORE</b>	<b>DESCRIPTION</b>
<b>4</b>	The student earns 6 points. Correct labels: Parts 1 and 3: Cubic Ft. The response contains no incorrect work.
<b>3</b>	The student earns 5 points.
<b>2</b>	The student earns 3–4 points OR 2 points with each point from a different Part.
<b>1</b>	The student earns 2 points from the same Part OR the student earns 1 point OR some minimal understanding is shown: Ex. Part 1: correct radius or height – no other credit. Part 2: 2 out of 3 pairs of sides drawn with correct dimensions.
<b>0</b>	The student earns 0 points. No understanding is shown.
<b>B</b>	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

**GEOMETRY OPEN-RESPONSE ITEM B**

**B.** Copy the Venn diagram below into your Student Answer Document.



Canadian Provinces		Population Over 1,000,000	Area Greater Than 300,000 Square Miles
Alberta	Nova Scotia	Alberta	British Columbia
British Columbia	Nunavut	British Columbia	Ontario
Manitoba	Ontario	Manitoba	Quebec
New Brunswick	Prince Edward Island	Ontario	Northwest Territories
Newfoundland	Quebec	Quebec	Nunavut
Northwest Territories	Saskatchewan		
	Yukon Territories		

- Write each province in the correct location in the Venn diagram.
- Explain your reasoning for placing each of the provinces where you did.

**BE SURE TO LABEL YOUR RESPONSES 1 AND 2.**

**RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM B**

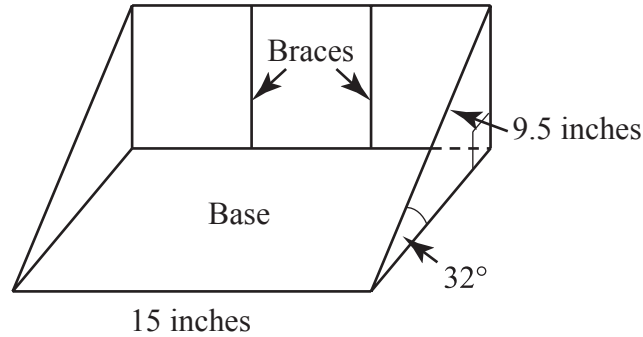
SCORE	DESCRIPTION
<b>4</b>	The student earns 5 points. Venn Diagram is enclosed in a rectangle (drawn or using grid). The response includes correct labeling of Rectangle and Circles. The response contains no incorrect work.
<b>3</b>	The student earns 4 points.
<b>2</b>	The student earns 2–3 points.
<b>1</b>	The student earns 1 point or some minimal understanding is shown.
<b>0</b>	The student earns 0 points. No understanding is shown.
<b>B</b>	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

**Note: Correct labels are an issue only at the “4” level.**

**PART II Released Items – 2006 Geometry**

**GEOMETRY OPEN-RESPONSE ITEM C**

- C. Steven is making an aluminum shovel. The shovel has a slope of  $32^\circ$  to the horizontal, is 15 inches wide, and has a slant length of 9.5 inches, as shown in the figure below.



(Not drawn to scale.)

Steven needs to add 2 braces on the back side. The back side is perpendicular to the base.

1. What is the length of each brace that Steven needs to make, to the nearest hundredth of an inch? Show or explain all of your work even if you use mental math or a calculator.
2. To the nearest square inch, how much aluminum will Steven need for the base of the shovel? Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

**RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM C**

<b>SCORE</b>	<b>DESCRIPTION</b>
<b>4</b>	The student earns 4 points. Labels of “inches” in Part 1 and “Sq. in.” in Part 2 are not required but must not be incorrect. The response contains no incorrect work.
<b>3</b>	The student earns 3–3 ½ points.
<b>2</b>	The student earns 2–2 ½ points.
<b>1</b>	The student earns ½–1 ½ points or some minimal understanding is shown.
<b>0</b>	The student earns 0 points. No understanding is shown.
<b>B</b>	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

**PART II Released Items – 2006 Geometry**

**GEOMETRY OPEN-RESPONSE ITEM D**

**D.** A map of Ramsey County is drawn on a coordinate grid. The Norway River is represented by a straight line from the dam to the point where it intersects the Red River. The dam is located at point  $(-8, -2)$ . The Norway River intersects the Red River at point  $(-2, 6)$ . A new bridge will be built at the midpoint between the dam and the point where the rivers intersect.

1. What are the coordinates of the point at which the bridge will be built? Show or explain all of your work even if you use mental math or a calculator.

A highway will be built **parallel** to the Norway River. It will pass through the point  $(6, 3)$ . Planners need to know the linear equation that will represent the new highway on the coordinate grid.

2. Write the equation of the new highway in slope-intercept form. Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

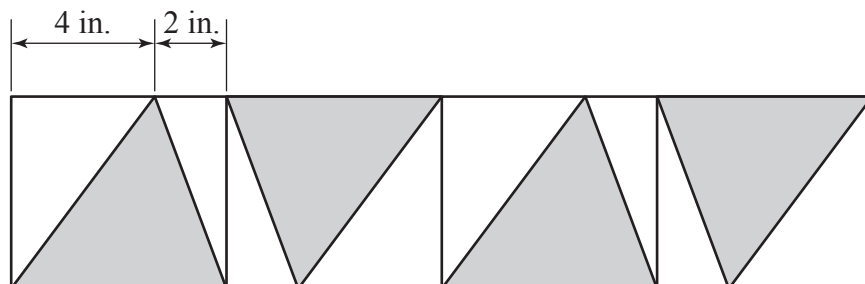
**RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM D**

<b>SCORE</b>	<b>DESCRIPTION</b>
<b>4</b>	The student earns 4 points. Part 1: $(-5, 2)$ or $x = -5$ and $y = 2$ . The response contains no incorrect work.
<b>3</b>	The student earns 3–3 ½ points.
<b>2</b>	The student earns 2–2 ½ points.
<b>1</b>	The student earns ½–1 ½ points or some minimal understanding is shown: Ex. Correct slope of $4/3$ with no work shown. No other credit.
<b>0</b>	The student earns 0 points. No understanding is shown.
<b>B</b>	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

**PART II Released Items – 2006 Geometry**

**GEOMETRY OPEN-RESPONSE ITEM E**

- E. The school band is making a banner. The banner is made up of 4 congruent rectangles with a congruent triangle in each rectangle as shown below. The width of the banner is  $\frac{1}{6}$  of the total length of the banner.



(Not drawn to scale.)

1. What is the perimeter of the banner? Show or explain all of your work even if you use mental math or a calculator.

The band plans to use red fabric for the triangle shapes shaded in the figure shown above.

2. How many square inches of red fabric will be needed for the banner? Show or explain all of your work even if you use mental math or a calculator.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

**RUBRIC FOR GEOMETRY OPEN-RESPONSE ITEM E**

<b>SCORE</b>	<b>DESCRIPTION</b>
<b>4</b>	The student earns 4 points. Correct labels: Part 1 – Inches, Part 2 – No label required, but if given cannot be incorrect. The response contains no incorrect work.
<b>3</b>	The student earns 3–3 ½ points.
<b>2</b>	The student earns 2–2 ½ points.
<b>1</b>	The student earns ½–1 ½ points or some minimal understanding is shown: Ex. Part 1: L = 24 and W = 4 with no work and no other credit.
<b>0</b>	The student earns 0 points. No understanding is shown.
<b>B</b>	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)