ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Geometry
Mid-Year End-of-Course Examination

January 2008 Administration

Arkansas Department of Education

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PART I Overview

The criterion-referenced tests implemented as part of the **Arkansas Comprehensive Testing, Assessment, and Accountability Program** (ACTAAP) are being developed in response to Arkansas Legislative Act 35, which requires the State Board of Education to develop a comprehensive testing program that includes assessment of the challenging academic content standards defined by the Arkansas Curriculum Frameworks.

As part of this program, students in Arkansas public schools who had completed or were completing Geometry by the end of the first semester participated in the *Geometry Mid-Year End-of-Course Examination* in January 2008.

This *Released Item Booklet* for the *Geometry Mid-Year End-of-Course Examination* contains test questions or items that were asked of students during the January 2008 operational administration. The test items included in Part II of this booklet are some of the items that contributed to the student performance results for that administration.

Students were given approximately an hour and a half each day to complete assigned test sessions during the two days of testing in January 2008. Students were permitted to use a calculator for both multiple-choice and open-response items. Students were also supplied with a reference sheet to be used so that all students would have equal access to this information during testing. (See the reference sheet on page 13 of this booklet.) All of the multiple-choice items within this booklet have the correct response marked with an asterisk (*).

The development of the *Geometry Mid-Year End-of-Course Examination* was based on the *Arkansas Geometry Mathematics Curriculum Framework*. This framework has distinct levels: *Strands* to be taught in concert, *Content Standards* within each Strand, and *Student Learning Expectations* within each Content Standard. An abridged version of the *Arkansas Geometry Mathematics Curriculum Framework* can be found in Part III of this booklet. It is important to note that this abridged version lists only the predominant Strand, Content Standard, and Student Learning Expectation associated with each item. However, since many key concepts within the *Arkansas Geometry Mathematics Curriculum Framework* are interrelated, in many cases there are other item correlations or associations across Strands, Content Standards, and Student Learning Expectations.

Part IV of the *Released Item Booklet* contains a tabular listing of the Strand, Content Standard, and Student Learning Expectation that each question was designed to assess. The multiple-choice and open-response items found on the *Geometry Mid-Year End-of-Course Examination* were developed in close association with the Arkansas education community. Arkansas teachers participated as members of the Geometry Content Advisory Committee, providing routine feedback and recommendations for all items. The number of items associated with specific Strands, Content Standards, and Student Learning Expectations was based on approximate proportions suggested by the Content Advisory Committee, and their recommendations were accommodated to the greatest extent possible given the overall test design. Part IV of the *Released Item Booklet* provides Arkansas educators with specific information on how the *Geometry Mid-Year End-of-Course Examination* items align or correlate with the *Arkansas Geometry Mathematics Curriculum Framework* to provide models for classroom instruction.

PART I Scoring Student Responses to Geometry Open-Response Items

While multiple-choice items are scored by machine to determine if the student chose the correct answer from four options, responses to open-response items must be scored by trained "readers" using a pre-established set of scoring criteria.

The Arkansas Geometry Rangefinding Committee assisted in the development of the scoring criteria. The committee comprises active, Arkansas educators with expertise in mathematics education.

Reader Training

Before readers are allowed to begin assigning scores to any student responses, they go through intensive training. The first step in that training is for the readers to read the Geometry open-response items as they appear in the test booklet and to respond—just as the student test takers are required to do. This step gives the readers some insight into how the students might have responded. The next step is the readers' introduction to the scoring rubric. All of the specific requirements of the rubric are explained by the Scoring Director who has been specifically trained to lead the scoring group. Then responses (anchor papers) that illustrate the score points of the rubric are presented to the readers and discussed. The goal of this discussion is for the readers to understand why a particular response (or type of response) receives a particular score. After discussion of the rubric and anchor papers, readers practice scoring sets of responses that have been pre-scored and selected for use as training papers. Detailed discussion of the responses and the scores they receive follows.

After three or four of these practice sets, readers are given "qualifying rounds." These are additional sets of pre-scored papers, and, in order to qualify, each reader must score in exact agreement on at least 80% of the responses and have no more than 5% non-adjacent agreement on the responses. Readers who do not score within the required rate of agreement are not allowed to score the *Geometry Mid-Year End-of-Course Examination* responses.

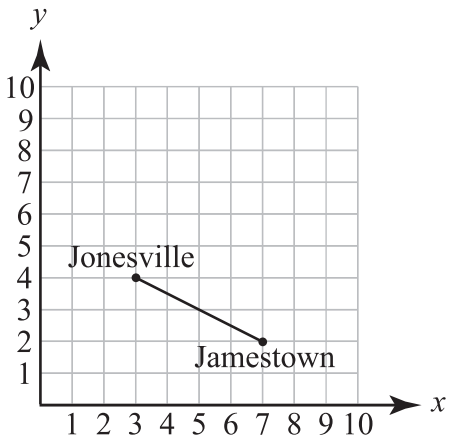
Once scoring of the actual student responses begins, readers are monitored constantly throughout the project to ensure that they are scoring according to the criteria. Daily and cumulative statistics are posted and analyzed, and Scoring Directors or Team Leaders reread selected responses scored by the readers. These procedures promote reliable and consistent scoring. Any reader who does not maintain an acceptable level of agreement is dismissed from the project.

Scoring Procedures

All student responses to the *Geometry Mid-Year End-of-Course Examination* open-response test items are scored independently by two readers. Those two scores are compared, and responses that receive scores that are non-adjacent (a "1" and a "3," for example) are scored a third time by a Team Leader or the Scoring Director for resolution.

PART II Released Geometry Items

1. The coordinate grid below shows the locations of Jonesville and Jamestown.



Midland is halfway between Jonesville and Jamestown. What would be the coordinates of Midland if it were marked on this map?

A. (6, 2.5)

B. (4, 3.5)

* C. (5, 3)

D. (2, 2)

2. The statements below are true about the three types of inhabitants, X, Y, and Z, of a fictional planet named Mathos.

- All Xs are Ys.
- All Zs are Xs.

Based on this information, which statement must be true?

A. All Ys are Xs.

* B. All Zs are Ys.

C. All Xs are Zs.

D. All Ys are Zs.

3. Michelle measured the distance around the center of her basketball to be equal to 10π inches. To the nearest cubic inch, what is the volume of her ball? Use $\pi = 3.14$.

A. 287 cubic inches

* B. 523 cubic inches

C. 707 cubic inches

D. 1,146 cubic inches

4. Mr. Wallace has different lengths of scrap lumber that he wants to use to build a triangular support. Which combination of lengths of scrap lumber can Mr. Wallace use to form a triangle?

* A. 2 ft, 3 ft, and 4 ft

B. 3 ft, 4 ft, and 7 ft

C. 5 ft, 9 ft, and 15 ft

D. 6 ft, 8 ft, and 17 ft

5. Allison had a piece of wood that was in the shape of a rectangular pyramid. Using a saw, she cut the piece of wood parallel to the base of the pyramid. What shape is the cross section of the pyramid?

A. triangle

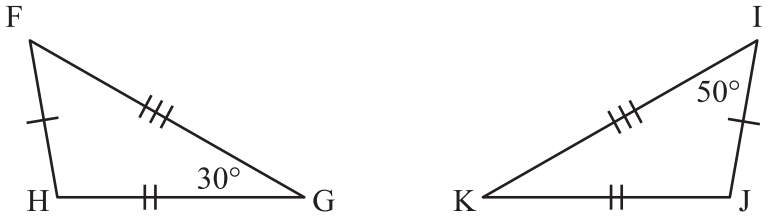
B. rhombus

C. pentagon

* D. rectangle

PART II Released Geometry Items

6. In the figure below, $\Delta FGH \cong \Delta IKJ$.



What is the measure of $\angle IJK$?

A. 10°

B. 30°

* C. 100°

D. 130°

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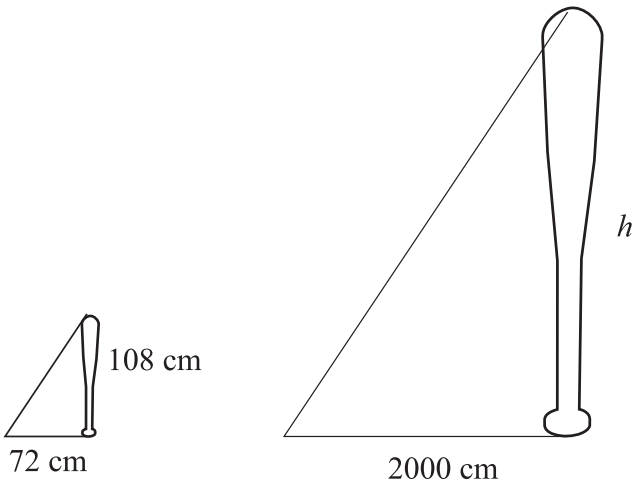
7. Edward wants to determine the height of a sculpture in Chicago called *Batcolumn*, which depicts a giant baseball bat. He measures the length of the shadow of the sculpture to be 2000 cm. Standing at the end of this shadow, he places a 108-cm long baseball bat vertically with one end on the ground. If the length of the shadow of the bat is 72 cm, what is the height, *h*, of the sculpture?



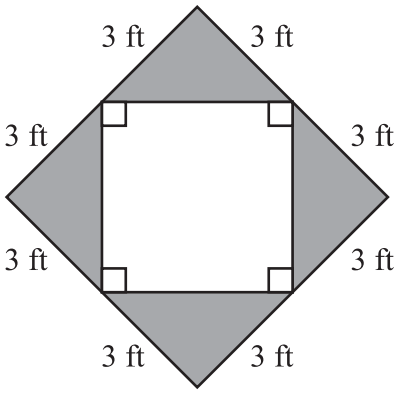
A. 1333.33 cm

B. 1381.33 cm

* C. 3000.00 cm

D. 3108.00 cm

8. At the Spring Fair, a game involves tossing a ball onto a square board bordered with wooden rails, as shown below. If the ball lands in one of the shaded areas, the person wins a prize.



Assuming the ball has an equal chance of landing anywhere in the area, what is the probability that a person playing the game wins a prize?

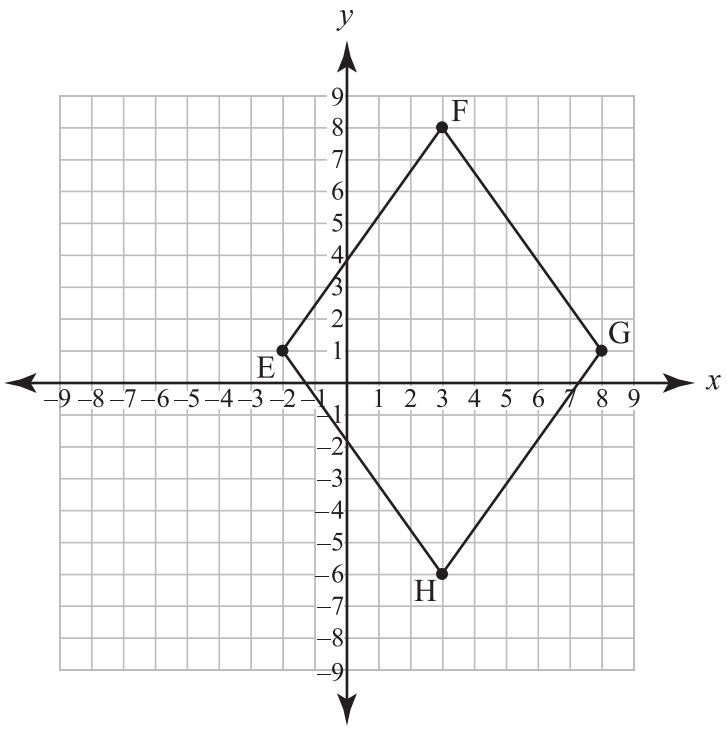
A. 9%

B. 25%

C. 36%

* D. 50%

9. Which is the **most** specific name for quadrilateral EFGH below?



A. square

* B. rhombus

C. rectangle

D. parallelogram

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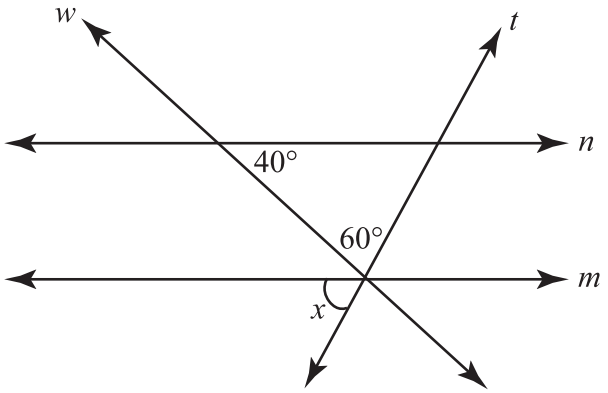
10. If $m \parallel n$, what is the value of x?



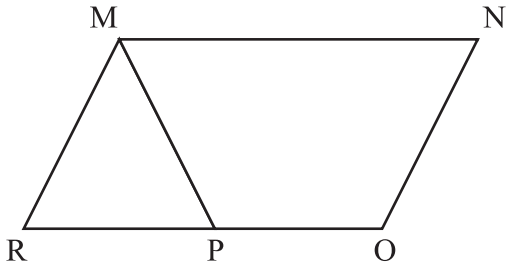
A. 40°

B. 60°

* C. 80°

D. 100°

11. Figure MNOP is an isosceles trapezoid, and figure MNOR is a parallelogram.



If m∠MPR = 62 degrees, what is m∠RMP?

* A. 56°

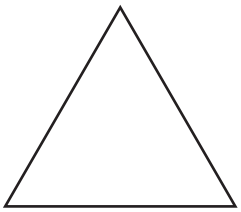
B. 62°

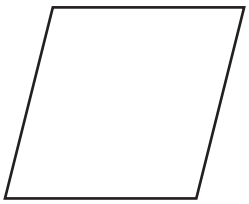
C. 118°

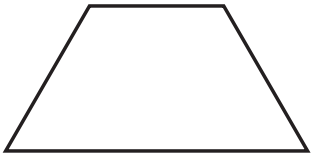
D. 136°

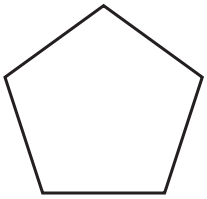
PART II Released Geometry Items

12. Which shape will **not** tessellate?

A. 

B. 

C. 

* D. 

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13. Robbie is looking at a map of cities in his state. He compares the populations of the cities as given below.

- Redville is larger in population than Carroltown.
- Marksville is smaller in population than Redville.
- Greensboro is smaller in population than Marksville.
- Greensboro is larger in population than Carroltown.

Which shows the **correct** order of the cities, when ordering them by population from largest to smallest?

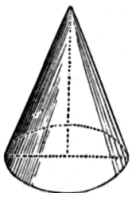
A. Redville, Carroltown, Marksville, Greensboro

B. Redville, Greensboro, Marksville, Carroltown

C. Redville, Marksville, Carroltown, Greensboro

* D. Redville, Marksville, Greensboro, Carroltown

14. The figure below shows a cone with a 1-inch radius and a height of 2 inches.



A new cone is constructed with a radius measuring 3 times the radius of the original cone, and a height measuring 3 times the height of the original cone. What is the ratio of the volume of the second cone to the volume of the original cone?

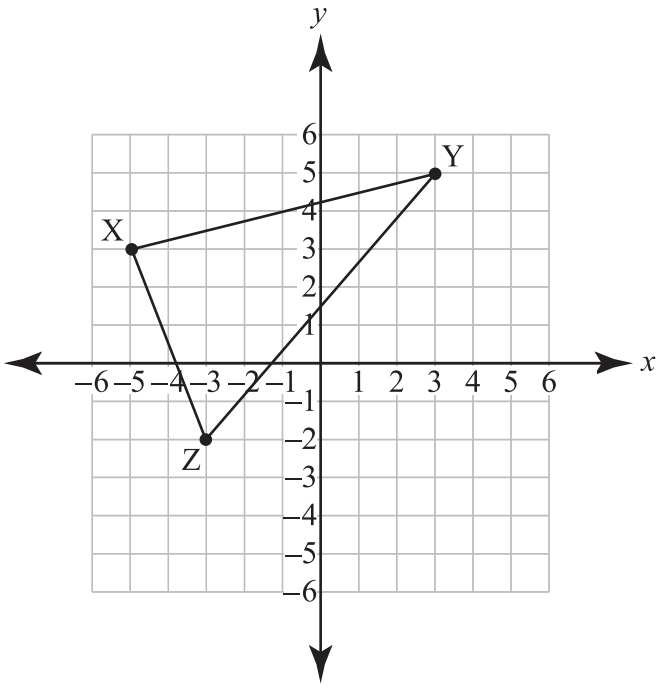
* A. 27 to1

B. 9 to1

C. 6 to1

D. 3 to1

15. The figure below is translated 3 units to the right, then 5 units down, and finally reflected over the *x*-axis.



What are the coordinates of the image of point X after the transformations?

A. (–2, –2)

* B. (–2, 2)

C. (2, –2)

D. (2, 2)

16. Which equation will graph a line that is perpendicular to $y = \frac{3}{5}x - 7$?

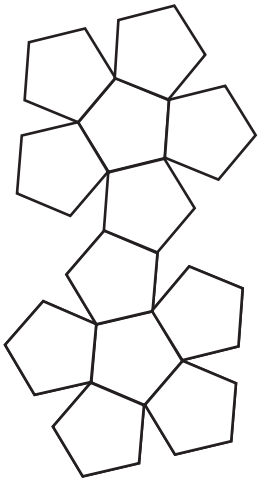
* A. $y = -\frac{5}{3}x + 7$

B. $y = -\frac{3}{5}x - 7$

C. $y = \frac{3}{5}x + \frac{1}{7}$

D. $y = \frac{5}{3}x - 7$

17. Which Platonic solid can be made from the net below?



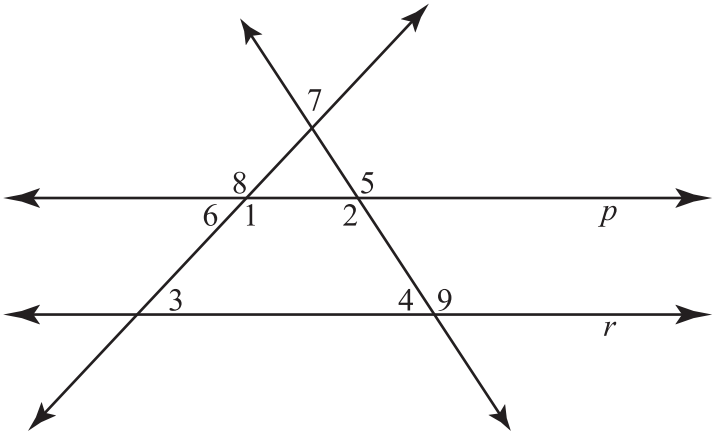
A. octahedron

B. hexahedron

C. icosahedron

* D. dodecahedron

18. In the figure below, $p \parallel r$.



Which must be supplementary angles?

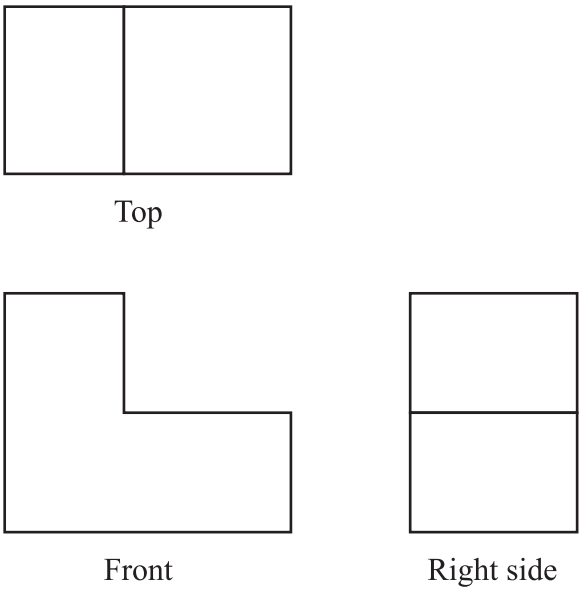
A. ∠2 and ∠5

B. ∠2 and ∠7

* C. ∠4 and ∠5

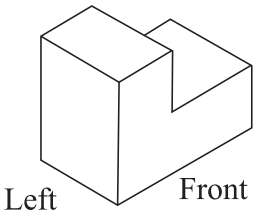
D. ∠3 and ∠4

19. Below is an orthographic drawing of a figure.

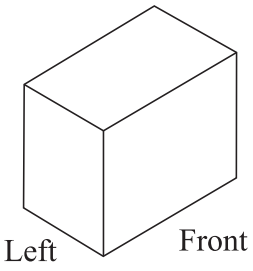


Which is the **correct** isometric drawing of the figure above?

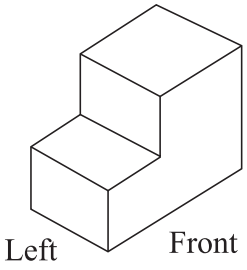
* A.



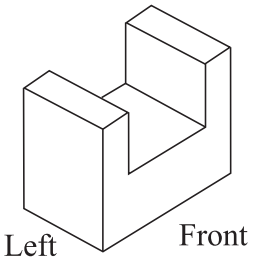
B.



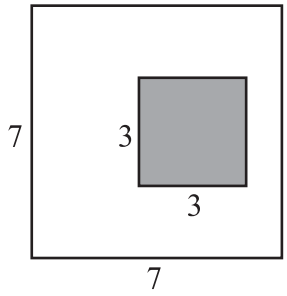
C.



D.



20. A computer program is written to randomly generate points in the larger square in the figure below.



What is the probability that a point chosen randomly by the computer will be in the shaded region?

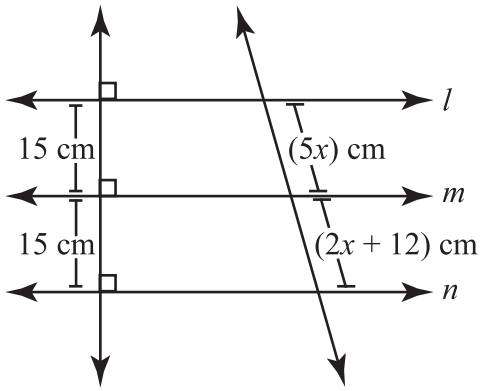
A. $\frac{3}{7}$

B. $\frac{9}{40}$

* C. $\frac{9}{49}$

D. $\frac{9}{58}$

21. What is the value of x in the figure below?



A. 3 cm

* B. 4 cm

C. 5 cm

D. 6 cm

22. A circle with a diameter of 18 units has its center point 5 units to the right and 2 units up from the origin. Which is an equation of the circle in standard form?

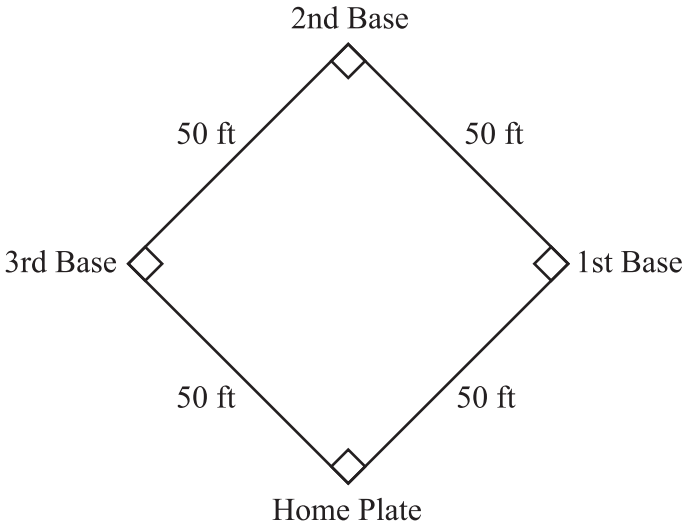
* A. $(x-5)^2 + (y-2)^2 = 81$

B. $(x-2)^2 + (y-5)^2 = 81$

C. $(x+5)^2 + (y+2)^2 = 18$

D. $(x-5)^2 + (y-2)^2 = 324$

23. Some kids in the neighborhood use an empty field to play baseball. The field is shown below, with the dimensions they have marked.



What is the distance, to the nearest tenth of a foot, between home plate and 2nd base?

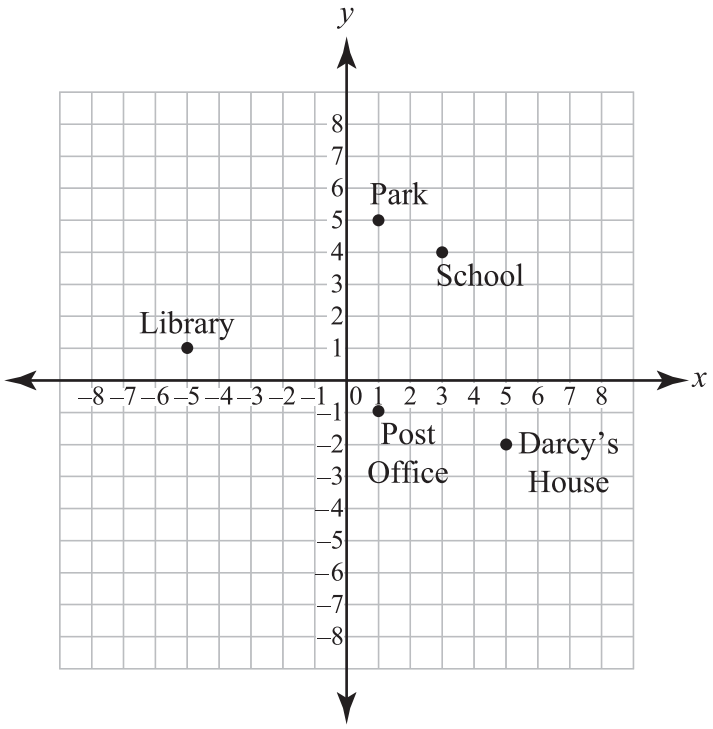
A. 35.4 ft

* B. 70.7 ft

C. 86.6 ft

D. 100.0 ft

24. Darcy used a coordinate grid, shown below, to sketch the locations of some important buildings in her town. Each block represents 1 square mile.



If Darcy could travel in a straight line from her house to school, how many miles would she travel?

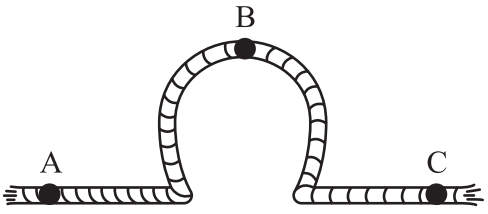
A. 5.1 miles

* B. 6.3 miles

C. 8.2 miles

D. 9.1 miles

25. A rope is used to make the shape below.



Which would contain the points A, B, and C?

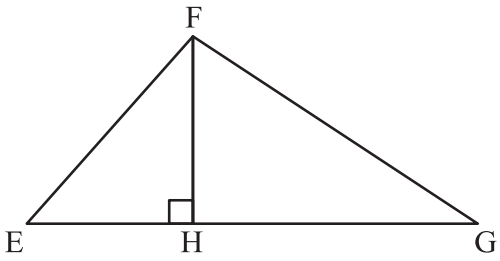
A. transversal

B. segment

C. secant

* D. plane

26. What does segment FH represent in ΔEFG?



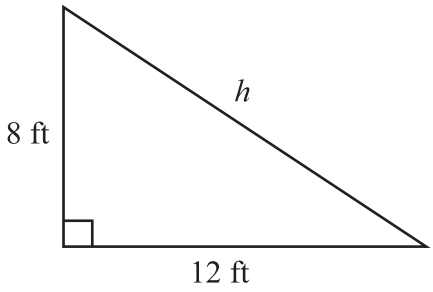
* A. altitude

B. median

C. midsegment

D. perpendicular bisector

27. Starting from the same location, Paul walks 8 feet to the north, while Amy walks 12 feet to the east.



What is the distance, *h,* between Paul and Amy, rounded to the nearest hundredth?

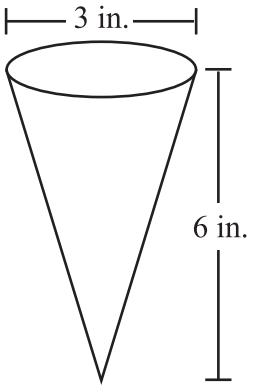
A. 9.79 ft

* B. 14.42 ft

C. 14.49 ft

D. 20.00 ft

28. Jamie went to get some ice cream with her friends at the local creamery. She bought an ice-cream cone with a height of 6 inches and diameter of 3 inches, as shown in the figure below.



What is the volume of ice cream, to the nearest hundredth of a cubic inch, that will completely fill the cone? Use $\pi = 3.14$.

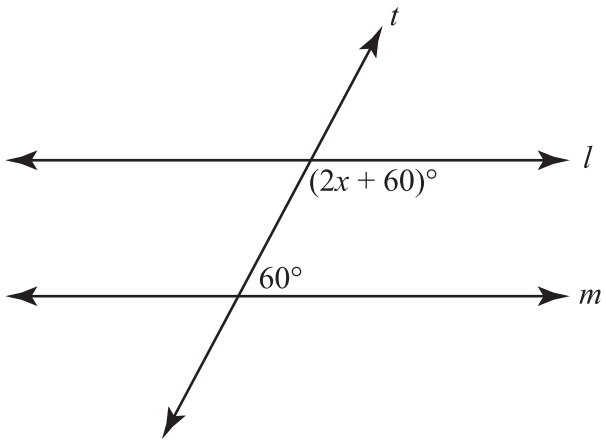
A. 9.42 in.^{3}

* B. 14.13 in.^{3}

C. 18.85 in.^{3}

D. 56.55 in.^{3}

29. What is the value of x that makes $l \parallel m$?



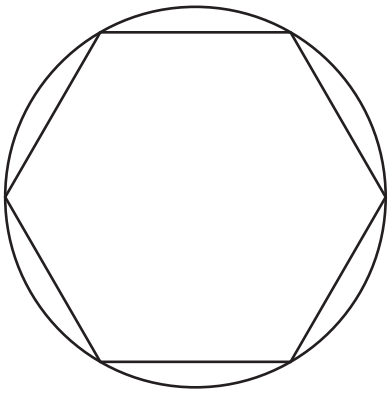
A. 0

B. 15

* C. 30

D. 60

30. The figure below shows a hexagon inscribed inside a circle.



If the diameter of the circle is 16 inches, what is the perimeter of the hexagon?

* A. 48.0 inches

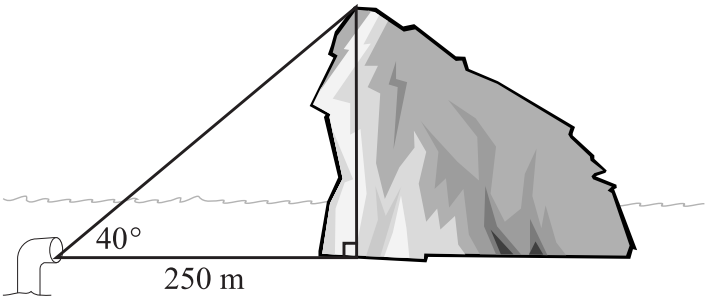
B. 50.24 inches

C. 96.0 inches

D. 166.3 inches

PART II Released Geometry Items

31. The captain of a submarine views an iceberg from his periscope, as shown in the figure below.



What is the height of the iceberg to the nearest meter?

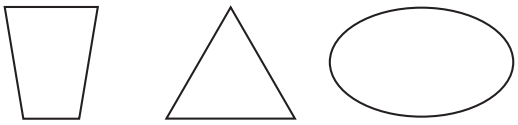
A. 161 m

B. 192 m

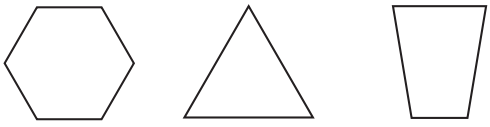
* C. 210 m

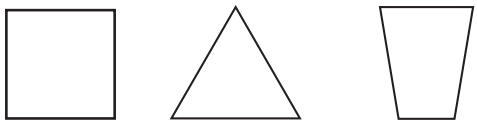
D. 298 m

32. Which set of shapes could be cross sections of a square pyramid?

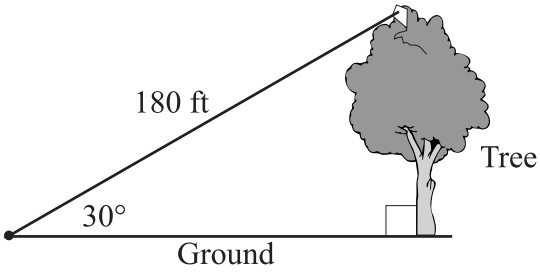
A. 

B. 

C. 

* D. 

33. Charlie has caught his kite in the top of a tree, as shown in the figure below.



He knows that the length of the kite's string is 180 feet, and the angle the string makes with the ground is 30 degrees. How far up the tree is his kite?

* A. 90 ft

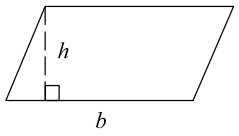
B. $90\sqrt{2}$ ft

C. $90\sqrt{3}$ ft

D. 180 ft

End-of-Course Mathematics Reference Sheet

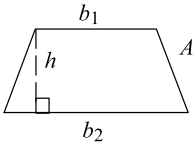
Parallelogram



P = sum of all sides

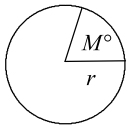
$A = bh$

Trapezoid



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

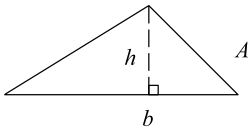
Arc and Sector



Arc Length = $\left(\frac{M}{360}\right) \times 2\pi r$

Sector area = $\left(\frac{M}{360}\right) \times \pi r^2$

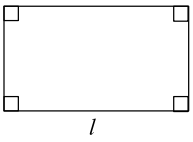
Triangle



P = sum of all sides

$A = \frac{bh}{2}$

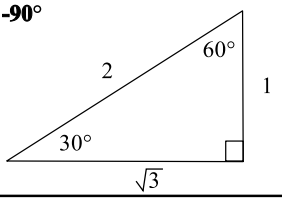
Rectangle



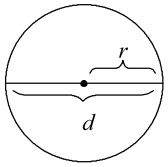
$P = 2l + 2w$

$A = l\,w$

30° -60° -90°



Circle



$C = 2\pi r$

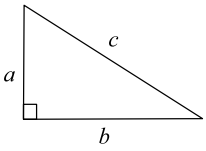
$C = \pi d$

$A = \pi r^2$

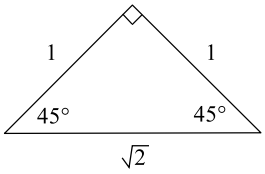
$\pi \approx 3.14$

Pythagorean Theorem

$a^2 + b^2 = c^2$

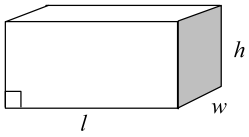


45° -45° -90°



Rectangular Solid

Volume = lwh

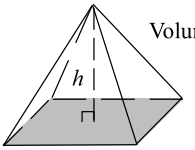


Surface area = $2lw + 2lh + 2wh$

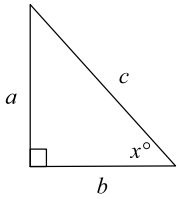
Pyramid

B = *area of base (shaded)*

Volume = $\frac{Bh}{3}$



Trigonometric Ratios

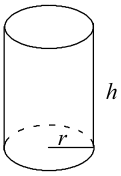


$\sin x° = \frac{a}{c}$

$\cos x° = \frac{b}{c}$

$\tan x° = \frac{a}{b}$

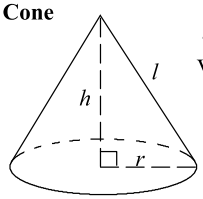
Cylinder



Volume = $\pi r^2 h$

Surface area = $2\pi rh + 2\pi r^2$

Cone

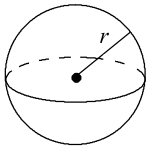


l = slant height

Volume = $\frac{\pi r^2 h}{3}$

Surface area = $\pi rl + \pi r^2$

Sphere



Volume = $\frac{4\pi r^3}{3}$

Surface area = $4\pi r^2$

Miscellaneous Formulas

Area of an equilateral triangle	$A = \frac{s^2\sqrt{3}}{4}$ s = length of a side
Distance	rate × time
Interest	principal × rate × time in years
Sum of the angles of a polygon having n sides	$(n-2)180°$
Distance between points on a coordinate plane	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Midpoint	$\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2}\right)$
Slope of a nonvertical line (where $x_2 \neq x_1$)	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Slope intercept (where m = slope, b = intercept)	$y = mx + b$
Last term of an arithmetic series Last term of a geometric series (where $n \geq 1$)	$a_n = a + (n-1)\,d$ $a_n = ar^{n-1}$
Quadratic formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Area of a square	$A = s^2$
Volume of a cube	$V = s^3$
Area of a regular polygon	$A = \frac{1}{2}ap$ a = apothem, p = perimeter

PART III Curriculum Framework

The Arkansas Geometry Mathematics Curriculum Framework*

Strands	Content Standards	Student Learning Expectations
1. LANGUAGE OF GEOMETRY (LG)	1. Students will develop the language of geometry including specialized vocabulary, reasoning, and application of theorems, properties, and postulates.	1. Define, compare, and contrast inductive reasoning and deductive reasoning for making predictions based on real-world situations. • Venn diagrams • matrix logic • conditional statements (statement, inverse, converse, and contrapositive) • figural patterns 2. Represent points, lines, and planes pictorially with proper identification, as well as basic concepts derived from these undefined terms, such as segments, rays, and angles. 3. Describe relationships derived from geometric figures or figural patterns. 4. Apply, with and without appropriate technology, definitions, theorems, properties, and postulates related to such topics as complementary, supplementary, vertical angles, linear pairs, and angles formed by perpendicular lines. 5. Explore, with and without proper technology, the relationship between angles formed by two lines cut by a transversal to justify when lines are parallel. 6. Give justification for conclusions reached by deductive reasoning. State and Prove key basic theorems in geometry (i.e., the Pythagorean theorem, the sum of the measures of the angles of a triangle is 180°, and the line joining the midpoints of two sides of a triangle is parallel to the third side and half its length).
2. TRIANGLES (T)	2. Students will identify and describe types of triangles and their special segments. They will use logic to apply the properties of congruence, similarity, and inequalities. The students will apply the Pythagorean Theorem and trigonometric ratios to solve problems in real-world situations.	1. Apply congruence (SSS ...) and similarity (AA ...) correspondences and properties of figures to find missing parts of geometric figures, and provide logical justification. 2. Investigate the measures of segments to determine the existence of triangles (triangle inequality theorem). 3. Identify and use the special segments of triangles (altitude, median, angle bisector, perpendicular bisector, and midsegment) to solve problems. 4. Apply the Pythagorean Theorem and its converse in solving practical problems. 5. Use the special right triangle relationships (30°-60°-90° and 45°-45°-90°) to solve problems. 6. Use trigonometric ratios (sine, cosine, tangent) to determine lengths of sides and measures of angles in right triangles, including angles of elevation and angles of depression.

*The Content Standards and Student Learning Expectations listed are those that specifically relate to the released test items in this document.

PART III Curriculum Framework

The Arkansas Geometry Mathematics Curriculum Framework* (continued)

Strands	Content Standards	Student Learning Expectations
3. MEASUREMENT (M)	3. Students will measure and compare, while using appropriate formulas, tools, and technology, to solve problems dealing with length, perimeter, area, and volume.	1. Calculate probabilities arising in geometric contexts. Ex. Find the probability of hitting a particular ring on a dartboard. 2. Apply, using appropriate units, appropriate formulas (area, perimeter, surface area, volume) to solve application problems involving polygons, prisms, pyramids, cones, cylinders, and spheres, as well as composite figures, expressing solutions in both exact and approximate forms. 3. Relate changes in the measurement of one attribute of an object to changes in other attributes. Ex. How does changing the radius or height of a cylinder affect its surface area or volume? 4. Use (given similar geometric objects) proportional reasoning to solve practical problems (including scale drawings). 5. Identify and apply properties of, and theorems about, parallel and perpendicular lines to prove other theorems and perform basic Euclidean constructions.
4. RELATIONSHIPS BETWEEN TWO- AND THREE-DIMENSIONS (R)	4. Students will analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.	1. Explore and verify the properties of quadrilaterals. 2. Solve problems using properties of polygons. • sum of the measures of the interior angles of a polygon • interior and exterior angle measure of a regular polygon or irregular polygon • number of sides or angles of a polygon 3. Identify and explain why figures tessellate. 4. Identify the attributes of the five Platonic Solids. 5. Investigate and use the properties of angles (central and inscribed), arcs, chords, tangents, and secants to solve problems involving circles. 6. Solve problems using inscribed and circumscribed figures. 7. Use orthographic drawings (top, front, side) and isometric drawings (corner) to represent three-dimensional objects. 8. Draw, examine, and classify cross sections of three-dimensional objects.
5. COORDINATE GEOMETRY AND TRANSFORMATIONS (CGT)	5. Students will specify locations, apply transformations, and describe relationships using coordinate geometry.	1. Use coordinate geometry to find the distance between two points, the midpoint of a segment, and the slopes of parallel, perpendicular, horizontal, and vertical lines. 5. Determine, given a set of points, the type of figure based on its properties (parallelogram, isosceles triangle, trapezoid). 6. Write, in standard form, the equation of a circle, given a graph on a coordinate plane or the center and radius of a circle. 7. Draw and interpret the results of transformations and successive transformations on figures in the coordinate plane. • translations • reflections • rotations (90°, 180°, clockwise and counterclockwise about the origin) • dilations (scale factor)

*The Content Standards and Student Learning Expectations listed are those that specifically relate to the released test items in this document.

PART IV Item Correlation with Curriculum Framework

Released Items for Geometry*

Strands	Content Standards
1— LANGUAGE OF GEOMETRY (LG)	1. Students will develop the language of geometry including specialized vocabulary, reasoning, and application of theorems, properties, and postulates.
2— TRIANGLES (T)	2. Students will identify and describe types of triangles and their special segments. They will use logic to apply the properties of congruence, similarity, and inequalities. The students will apply the Pythagorean Theorem and trigonometric ratios to solve problems in real-world situations.
3— MEASUREMENT (M)	3. Students will measure and compare, while using appropriate formulas, tools, and technology, to solve problems dealing with length, perimeter, area, and volume.
4— RELATIONSHIPS BETWEEN TWO- AND THREE-DIMENSIONS (R)	4. Students will analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.
5— COORDINATE GEOMETRY AND TRANSFORMATIONS (CGT)	5. Students will specify locations, apply transformations, and describe relationships using coordinate geometry.

Item	Strand	Content Standard	Student Learning Expectation
1	CGT	5	1
2	LG	1	6
3	M	3	2
4	T	2	2
5	R	4	8
6	T	2	1
7	M	3	4
8	M	3	1
9	CGT	5	5
10	LG	1	5
11	R	4	2
12	R	4	3
13	LG	1	1
14	M	3	3
15	CGT	5	7
16	CGT	5	1
17	R	4	4
18	LG	1	4
19	R	4	7
20	M	3	1
21	M	3	5
22	CGT	5	6
23	T	2	4
24	CGT	5	1
25	LG	1	2
26	T	2	3
27	T	2	4
28	M	3	2
29	LG	1	5
30	R	4	6
31	T	2	6
32	R	4	8
33	T	2	5

*Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Geometry items.

PART IV Item Correlation with Curriculum Framework

Non-Released Items for Geometry*

Strands	Content Standards
1— LANGUAGE OF GEOMETRY (LG)	1. Students will develop the language of geometry including specialized vocabulary, reasoning, and application of theorems, properties, and postulates.
2— TRIANGLES (T)	2. Students will identify and describe types of triangles and their special segments. They will use logic to apply the properties of congruence, similarity, and inequalities. The students will apply the Pythagorean Theorem and trigonometric ratios to solve problems in real-world situations.
3— MEASUREMENT (M)	3. Students will measure and compare, while using appropriate formulas, tools, and technology, to solve problems dealing with length, perimeter, area, and volume.
4— RELATIONSHIPS BETWEEN TWO- AND THREE-DIMENSIONS (R)	4. Students will analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.
5— COORDINATE GEOMETRY AND TRANSFORMATIONS (CGT)	5. Students will specify locations, apply transformations, and describe relationships using coordinate geometry.

Item	Strand	Content Standard	Student Learning Expectation
1	R	4	2
2	CGT	5	1
3	M	3	4
4	T	2	4
5	T	2	3
6	M	3	4
7	LG	1	1
8	T	2	4
9	R	4	7
10	LG	1	4
11	M	3	3
12	M	3	4
13	CGT	5	5
14	LG	1	5
15	CGT	5	5
16	LG	1	5
17	CGT	5	7
18	R	4	1
19	T	2	5
20	CGT	5	7
21	CGT	5	7
22	R	4	2
23	M	3	4
24	T	2	5
25	LG	1	3
26	LG	1	4
27	R	4	5
A	CGT	5	1
B	LG	1	1
C	M	3	4
D	T	2	6
E	LG	1	3

*Only the predominant Strand, Content Standard, and Student Learning Expectation are listed for the Geometry items.

ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

DEVELOPED FOR THE ARKANSAS DEPARTMENT OF EDUCATION, LITTLE ROCK, AR 72201

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