ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Geometry
End-of-Course Examination

April 2008 Administration

Arkansas Department of Education

Table of Contents

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 spring semester participated in the *Geometry End-of-Course Examination* in April 2008.

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

Students were given approximately two hours each day to complete assigned test sessions during the two days of testing in April 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 15 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 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 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 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 End-of-Course Examination* responses.

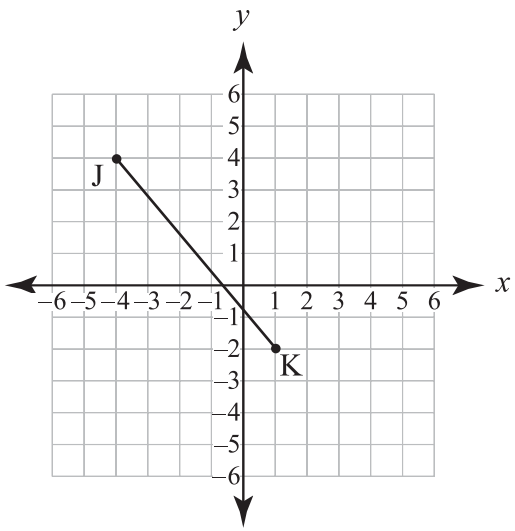
Once scoring of the actual student responses begins, readers are monitored constantly throughout the project to ensure that they are scoring according to the criteria. Daily and cumulative statistics are posted and analyzed, and the Scoring Director or Team Leaders reread selected responses scored by 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 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. What are the coordinates of the midpoint of $\overline{JK}$ in the graph below?



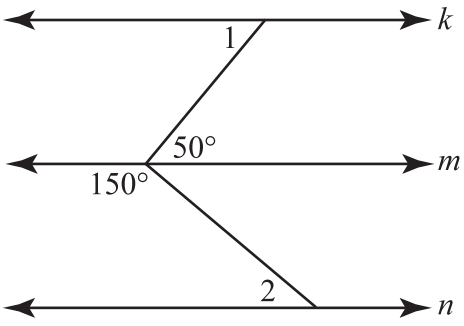
A. (–3, 2)

B. (–2, 2)

* C. $(-\frac{3}{2}, 1)$

D. $(-\frac{5}{2}, 3)$

2. In the figure below, lines *k*, *m*, and *n* are parallel.



What is the sum of m∠1 and m∠2?

* A. 80°

B. 100°

C. 180°

D. 200°

3. Patricia and three of her friends were measuring their heights. They wrote down the facts below.

- Sue is shorter than Marcy.
- Patricia is taller than Sue.
- Jessie is taller than Patricia.
- Jessie is shorter than Marcy.

Which shows the **correct** order from the shortest to the tallest girl?

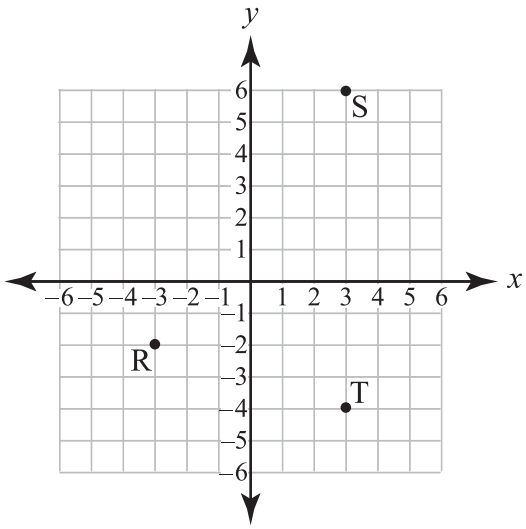
A. Marcy, Sue, Jessie, Patricia

B. Patricia, Sue, Marcy, Jessie

C. Sue, Patricia, Marcy, Jessie

* D. Sue, Patricia, Jessie, Marcy

4. Which would **most** accurately classify the triangle with vertices R, S, and T below?



A. equilateral triangle

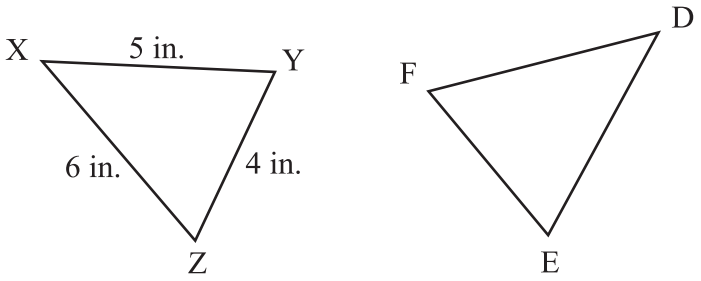
* B. isosceles triangle

C. scalene triangle

D. right triangle

PART II Released Geometry Items

5. Kate and Michael each used a triangle to make a design for a wallpaper pattern. The side lengths of Kate's triangle are shown in the figure below.



Kate Michael

The measures of ∠X and ∠D are both 15 degrees, the measures of ∠Y and ∠F are both 82 degrees, and $\overline{FE} \cong \overline{YZ}$. Based on this information, what is the length of side $\overline{DE}$ of Michael's triangle?

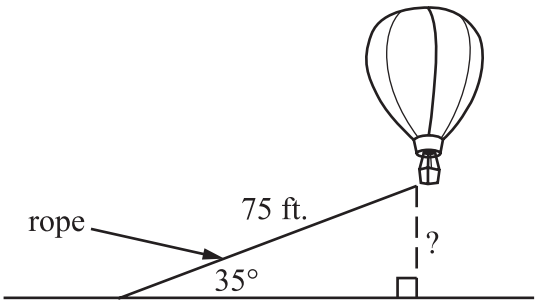
A. 4 in.

B. 5 in.

* C. 6 in.

D. 15 in.

Use the diagram below to answer question 6.



(Not drawn to scale.)

6. A rope is tied to the bottom of a hot air balloon as shown above. The rope makes an angle of 35° with the ground and is 75 ft. long. How far is the bottom of the balloon from the ground to the nearest foot?

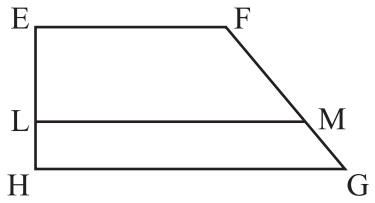
* A. 43 ft.

B. 53 ft.

C. 61 ft.

D. 131 ft.

7. In trapezoid EFGH, shown below, $\overline{EF}$, $\overline{LM}$, and $\overline{GH}$ are parallel, with $\overline{EH}$ = 12 cm, $\overline{FM}$ = 10 cm, and $\overline{FG}$ = 15 cm.



What is the length of $\overline{EL}$?

A. 4 cm

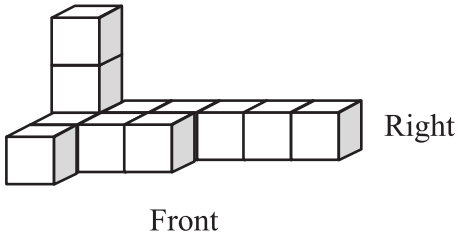
B. 6 cm

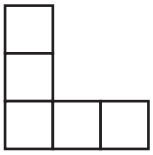
C. 7 cm

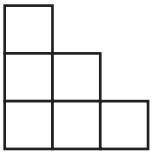
* D. 8 cm

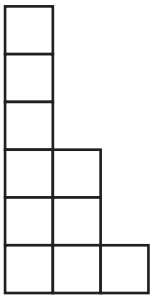
PART II Released Geometry Items

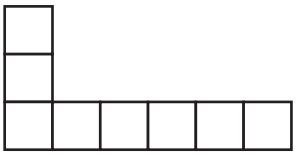
8. Which is the left-side view of the figure below?



* A. 

B. 

C. 

D. 

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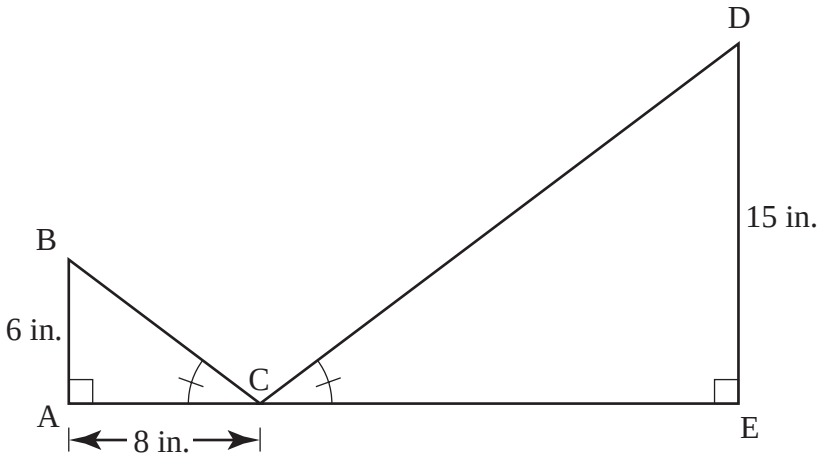
9. What is the length of $\overline{CD}$?



A. 3.2 in.

B. 10 in.

C. 20 in.

* D. 25 in.

PART II Released Geometry Items

10. Below are three figures made of hexagons.

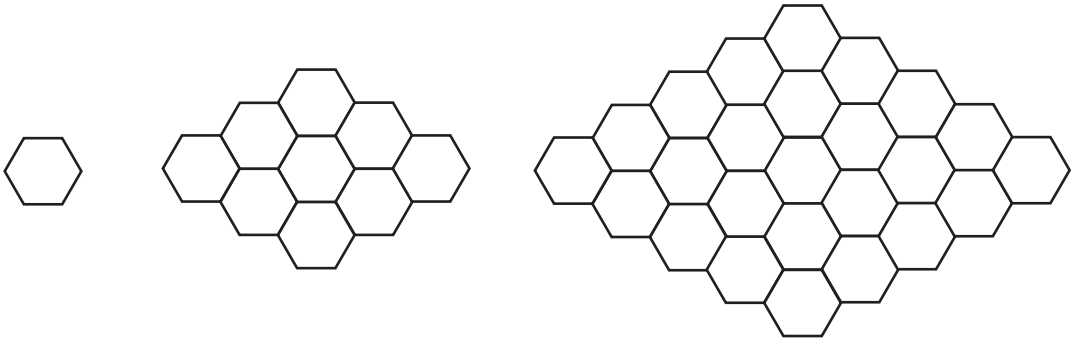


Figure 1
1 hexagon

Figure 2
9 hexagons

Figure 3
25 hexagons

If the pattern were to continue, how many hexagons would make up Figure 5?

A. 32

B. 49

* C. 81

D. 98

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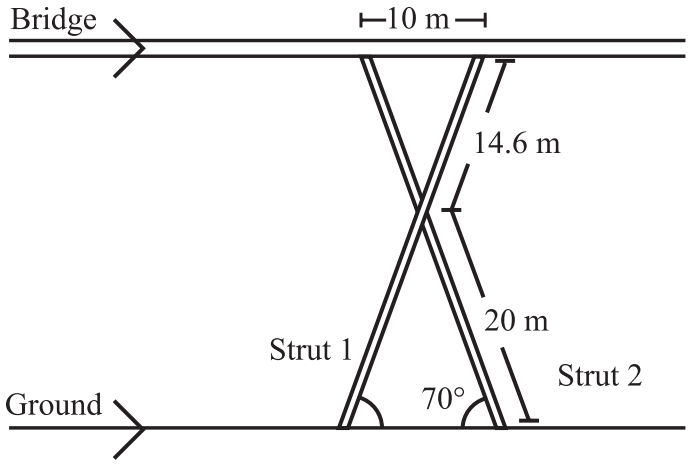
11. A student examines a bridge, its support structures, and the ground below the bridge, as shown in the figure below.



What distance separates the points where Struts 1 and 2 touch the ground?

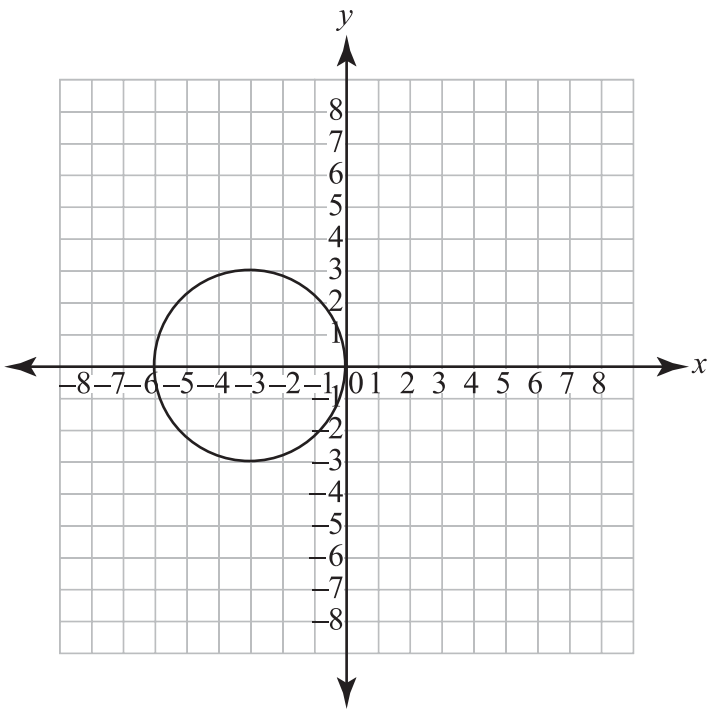
A. 7.3 meters

* B. 13.7 meters

C. 29.2 meters

D. 34.6 meters

12. Which is the equation of the circle shown below?



A. $(x - 3)^2 + y^2 = 3$

B. $(x - 3)^2 + y^2 = 9$

C. $(x + 3)^2 + y^2 = 3$

* D. $(x + 3)^2 + y^2 = 9$

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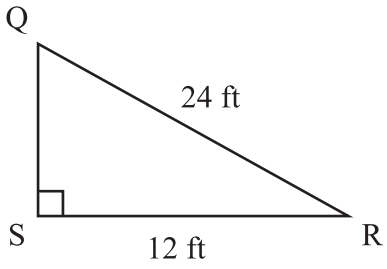
13. What is m∠R, to the nearest degree, in the figure below?



* A. 60°

B. 36°

C. 30°

D. 27°

14. A rhombus has a diagonal that lies on the line $y = \frac{1}{2}x + 3$. What is the slope of the other diagonal in the rhombus?

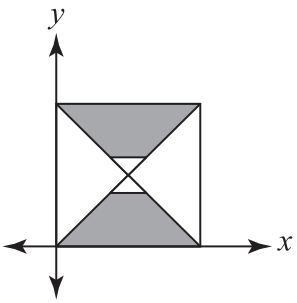
* A. -2

B. $-\frac{1}{2}$

C. $\frac{1}{2}$

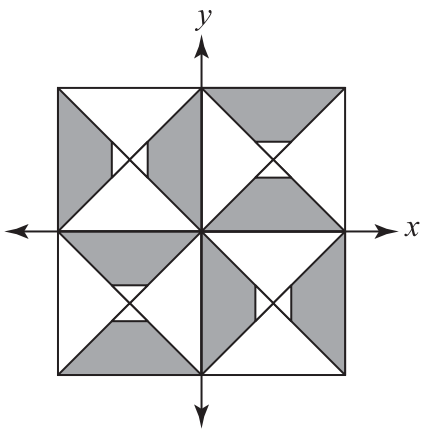
D. 2

15. Avari is making a quilt using the Arkansas Traveler Variation pattern. She starts with the block below.

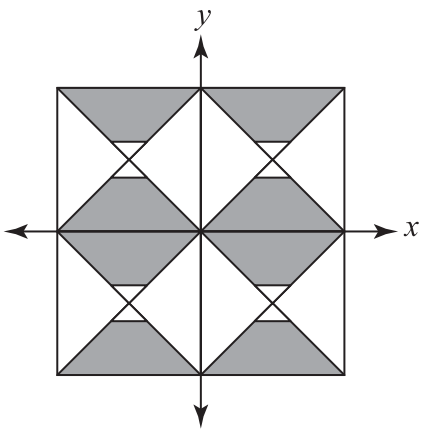


To draw the pattern, Avari sketches a second block by rotating the first block 90-degrees clockwise about the origin. Avari sketches two more blocks, each time rotating the previous block 90-degrees clockwise about the origin. When she completes the four blocks, which pattern has Avari made?

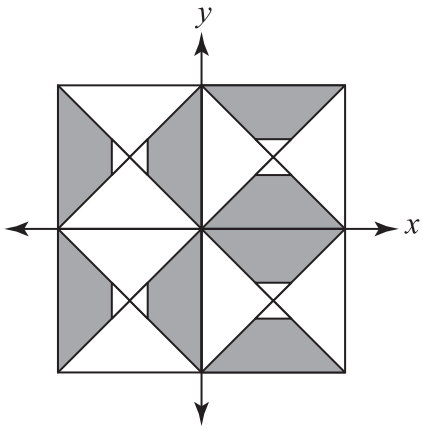
* A.



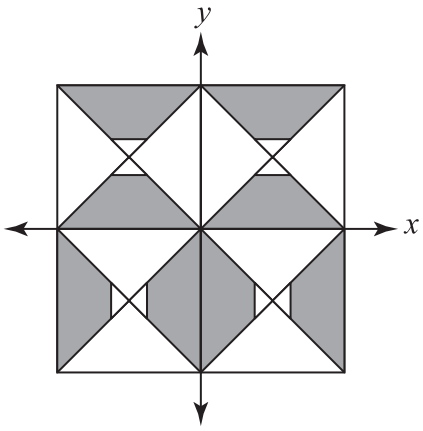
B.



C.



D.



16. In which direction would the final arrow point in Figure 6 of the pattern below?

Figure 1

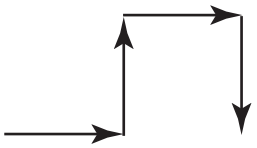


Figure 2

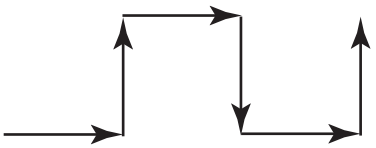


Figure 3

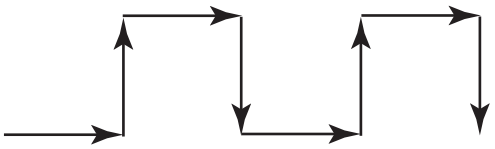


Figure 4

A. 

B. 

C. 

* D. 

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17. A cereal manufacturer needs to change the size of its cereal box to fit on narrower shelves. The dimensions of the current box are 12 inches high by 9 inches wide by 2 inches deep. The new box will have the same height and volume, but the width will be reduced by 1 inch. What will be the depth, to the nearest hundredth of an inch, of the new cereal box?

A. 2.22 inches

* B. 2.25 inches

C. 2.70 inches

D. 3.00 inches

18. Diane is putting new tile on one of the walls in her bathroom. She wants to use tiles that are regular-shaped polygons, which she will tessellate for the pattern on the tile. Which shape will **not** be able to tessellate for her bathroom design?

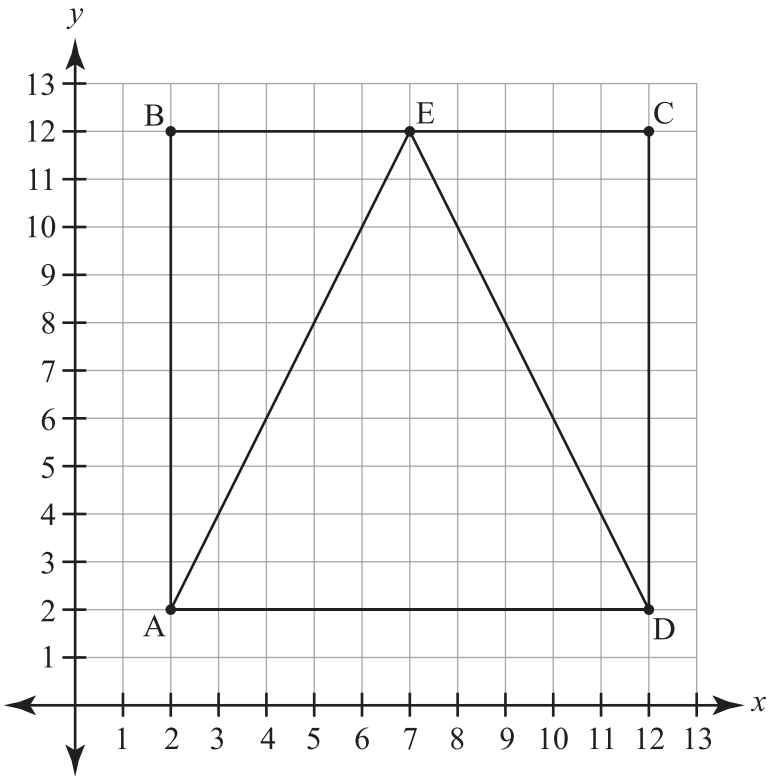
A. square

* B. octagon

C. triangle

D. hexagon

19. Edie inscribes ΔAED inside a square, ABCD, as shown below.



What kind of triangle did Edie draw?

A. right
B. scalene
* C. isosceles
D. equilateral

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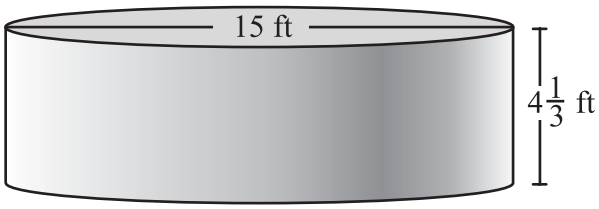
20. What regular polygon has an exterior angle that measures 60 degrees?

A. square
* B. regular hexagon
C. regular pentagon
D. equilateral triangle

21. A solid-glass sphere is cast with a radius of 30 cm. What is the volume, to the nearest whole number, of this sphere? Use $\pi = 3.14$.

A. 3768 cm^3
B. 63585 cm^3
* C. 113040 cm^3
D. 339120 cm^3

22. A cylindrical pool is being filled with water, as shown below. It measures 15 feet in diameter and $4\frac{1}{3}$ feet in height.



How much water, to the nearest cubic foot, must be pumped into the pool if it is to be filled to $\frac{3}{4}$ of its total height? Use $\pi = 3.14$.

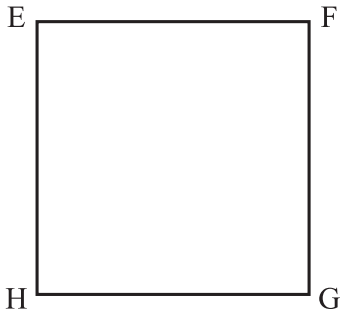
A. 255 ft^3

* B. 574 ft^3

C. 765 ft^3

D. 1,722 ft^3

23. You are trying to prove that quadrilateral EFGH is a square. You have already proven that all four sides are congruent.



Which statement, if true, would prove that EFGH is a square?

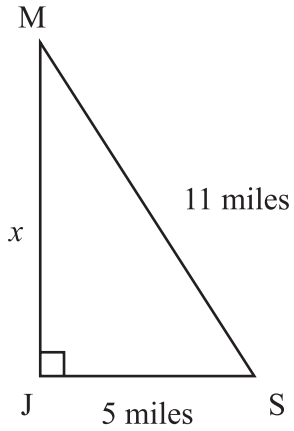
* A. The diagonals are congruent.

B. The opposite sides are congruent.

C. The opposite angles are congruent.

D. The adjacent angles are supplementary.

24. Students in a geometry class are learning to use triangles to calculate distances. In the figure below, the vertices J, M, and S represent the homes of Jason, Maurice, and Shanna, respectively.



How far does Jason live from Maurice, to the nearest tenth of a mile?

A. 6.0 miles

* B. 9.8 miles

C. 12.0 miles

D. 16.0 miles

25. A scale model of a cylindrical tank is 6 cm long. The model has a radius of 3 cm. Jake wants to bury a full size tank under his gas station. The full size tank has a radius of 4.5 m. How long is the full size tank?

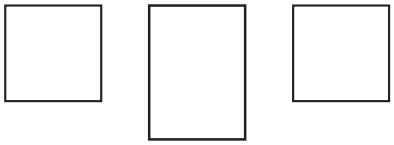
A. 2.25 m

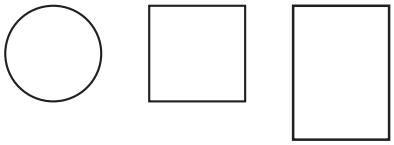
B. 4 m

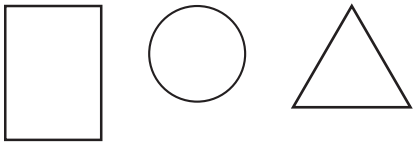
C. 7.5 m

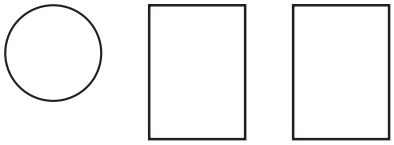
* D. 9 m

26. Which set of orthographic drawings could represent a cylinder?

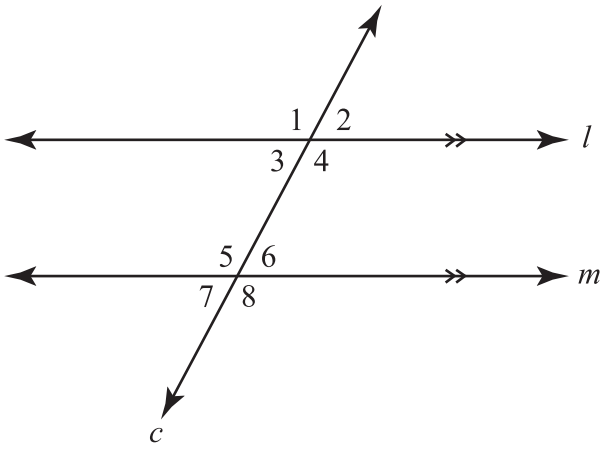
A. 

B. 

C. 

*D. 

27. In the figure below, line *l* is parallel to line *m*.



Which pair of angles must be supplementary?

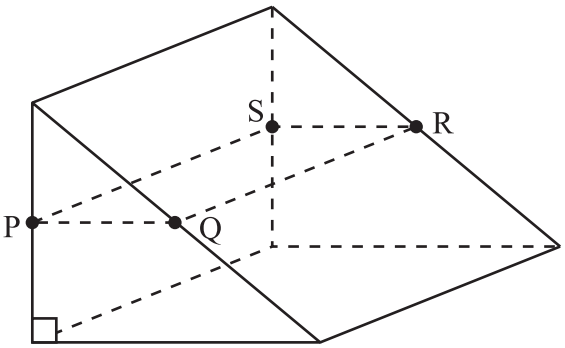
A. ∠1 and ∠8

* B. ∠3 and ∠5

C. ∠4 and ∠5

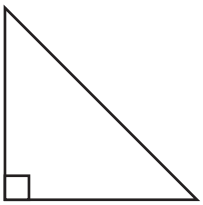
D. ∠6 and ∠7

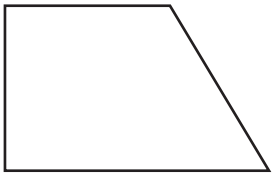
Use the figure below to answer question 28.

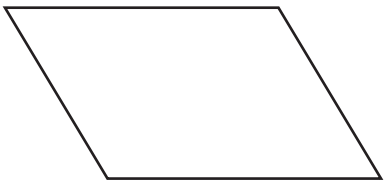


28. Which shape represents the cross section formed where a plane intersects the points P, Q, R and S in the right triangular prism shown above?

*A. 

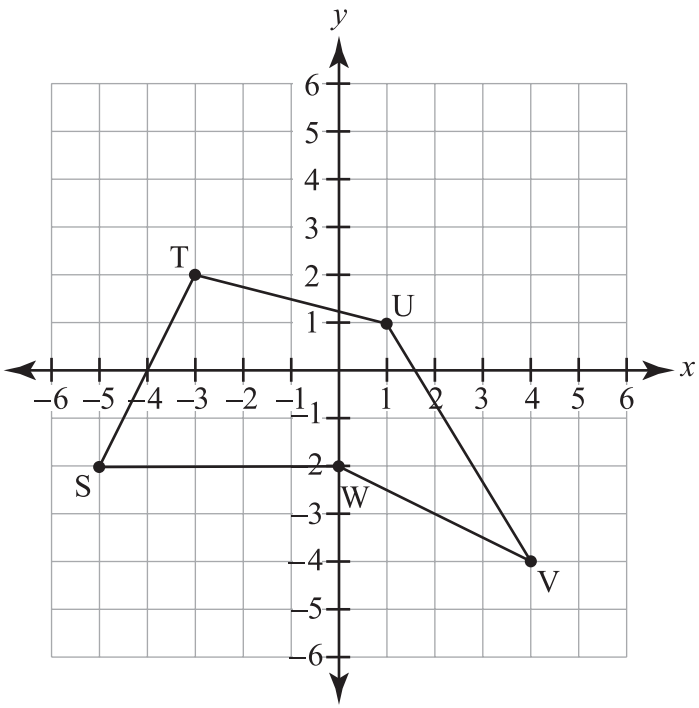
B. 

C. 

D. 

PART II Released Geometry Items

29. Polygon STUVW is shown below.



After polygon STUVW is reflected across the *y*-axis, what are the coordinates of S′, the image of point S after the transformation?

A. (–5, –2)

B. (–5, 2)

* C. (5, –2)

D. (5, 2)

---

30. The hypotenuse of a 30°-60°-90° triangle measures 10 inches. What is the area of the triangle, rounded to the nearest hundredth?

A. 12.50 $in.^2$

B. 17.68 $in.^2$

* C. 21.65 $in.^2$

D. 25.00 $in.^2$

31. Which can be used to make a Platonic solid?

A. right triangle

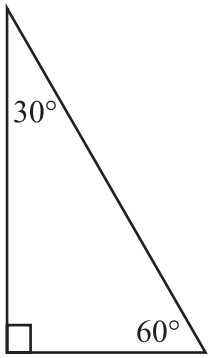
B. scalene triangle

C. isosceles triangle

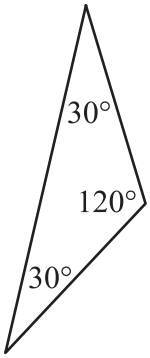
* D. equilateral triangle

32. Which triangle has an altitude that is also a median?

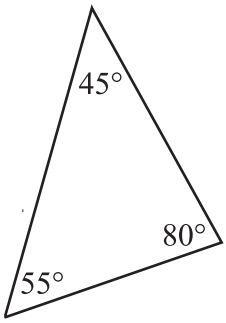
A.



* B.

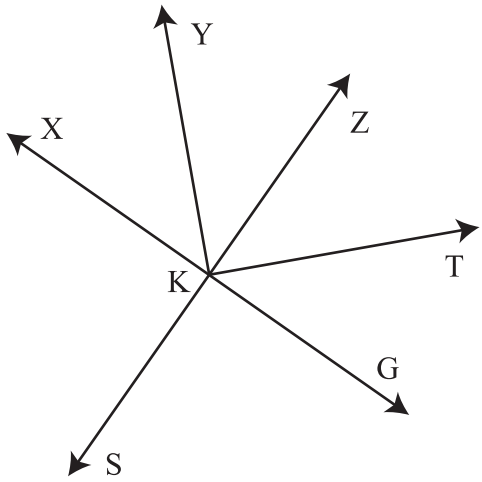


C.



D.

33. In the figure below, line SZ ⊥ line XG.



Which pair of angles are adjacent and complementary?

A. ∠XKS and ∠GKS

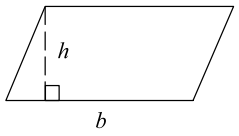
* B. ∠XKY and ∠ZKY

C. ∠YKS and ∠ZKT

D. ∠XKZ and ∠GKS

End-of-Course Mathematics Reference Sheet

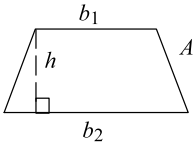
Parallelogram



P = sum of all sides

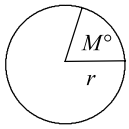
$A = bh$

Trapezoid



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

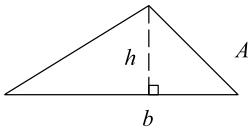
Arc and Sector



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

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

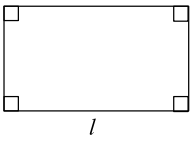
Triangle



P = sum of all sides

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

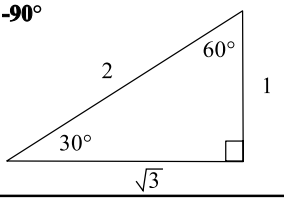
Rectangle



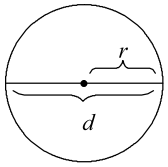
$P = 2l + 2w$

$A = l\,w$

30° -60° -90°



Circle



$C = 2\pi r$

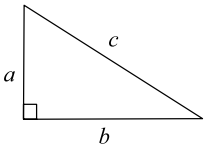
$C = \pi d$

$A = \pi r^2$

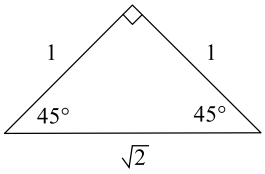
$\pi \approx 3.14$

Pythagorean Theorem

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

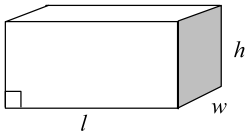


45° -45° -90°



Rectangular Solid

Volume = lwh

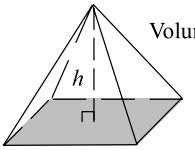


Surface area = $2lw + 2lh + 2wh$

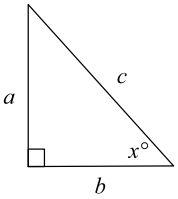
Pyramid

B = *area of base (shaded)*

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



Trigonometric Ratios

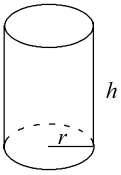


$\sin x° = \frac{a}{c}$

$\cos x° = \frac{b}{c}$

$\tan x° = \frac{a}{b}$

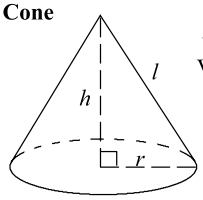
Cylinder



Volume = $\pi r^2 h$

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

Cone

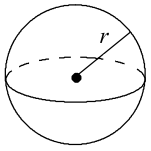


l = slant height

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 appropriate 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 it's length)
2. TRIANGLES (T)	2. Students will identify and describe types of triangles and their special segments. Students will use logic to apply the properties of congruence, similarity, and inequalities. 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.

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. 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. 2. Write the equation of a line parallel to a line through a given point not on the line. 3. Write the equation of a line perpendicular to a line through a given point. 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. Students will use logic to apply the properties of congruence, similarity, and inequalities. 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	5
3	LG	1	1
4	CGT	5	5
5	T	2	1
6	T	2	6
7	M	3	5
8	R	4	7
9	T	2	1
10	LG	1	3
11	T	2	1
12	CGT	5	6
13	T	2	6
14	R	4	1
15	CGT	5	7
16	LG	1	3
17	M	3	3
18	R	4	3
19	CGT	5	3
20	R	4	2
21	M	3	2
22	M	3	2
23	LG	1	6
24	T	2	4
25	M	3	4
26	R	4	7
27	LG	1	5
28	R	4	8
29	CGT	5	7
30	T	2	5
31	R	4	4
32	T	2	3
33	LG	1	4

*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. Students will use logic to apply the properties of congruence, similarity, and inequalities. 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	LG	1	4
2	R	4	2
3	CGT	5	1
4	T	2	1
5	LG	1	4
6	M	3	1
7	R	4	1
8	M	3	2
9	LG	1	5
10	T	2	1
11	CGT	5	2
12	LG	1	1
13	R	4	4
14	CGT	5	7
15	M	3	4
16	T	2	5
17	CGT	5	1
18	R	4	6
19	M	3	4
20	LG	1	2
21	CGT	5	1
22	M	3	2
23	T	2	2
24	M	3	2
25	CGT	5	1
26	T	2	1
27	LG	1	4
A	CGT	5	5
B	LG	1	5
C	M	3	3
D	R	4	7
E	T	2	4

*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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