Example Items

Geometry
Pre-AP

Geometry Pre-AP Example Items are a **representative set** of items for the ACP. Teachers may use this set of items along with the test blueprint as guides to prepare students for the ACP. On the last page, the correct answer, content SE and SE justification are listed for each item.

The specific part of an SE that an Example Item measures is NOT necessarily the only part of the SE that is assessed on the ACP. None of these Example Items will appear on the ACP.

Teachers may provide feedback regarding Example Items.

(1) Download the Example Feedback Form and email it. The form is located on the homepage of the Assessment website: https://assessment.dallasisd.org.

OR

(2) To submit directly, click "Example Feedback – online form" **after** you click the Example Items link under ACP Resources on the ACP tab on the Assessment website.

Second Semester
2020–2021
Code #: 1201

ACP Formulas
Geometry/Geometry PAP
2020 – 2021

Perimeter and Circumference	
Square: $P = 4s$	Rectangle: $P = 2\ell + 2w$
Circle: $C = 2\pi r$ $C = \pi d$	Arc Length: $\ell = \frac{x}{360^\circ} \cdot 2\pi r$
Area	
Square: $A = s^2$	Triangle: $A = \frac{1}{2}bh$
Rectangle: $A = \ell w$ $A = bh$	Regular Polygon: $A = \frac{1}{2}aP$
Parallelogram: $A = bh$	Circle: $A = \pi r^2$
Rhombus: $A = \frac{1}{2}d_1d_2$ $A = bh$	Sector of a Circle: $A = \frac{x}{360^\circ} \cdot \pi r^2$
Trapezoid: $A = \frac{1}{2}(b_1 + b_2)h$	
Lateral Surface Area	
Prism: $L = Ph$	Pyramid: $L = \frac{1}{2}P\ell$
Cylinder: $L = 2\pi rh$	Cone: $L = \pi r\ell$
Total Surface Area	
Prism: $S = Ph + 2B$	Pyramid: $S = \frac{1}{2}P\ell + B$
Cylinder: $S = 2\pi rh + 2\pi r^2$	Cone: $S = \pi r\ell + \pi r^2$
Sphere: $S = 4\pi r^2$	Area of a Sector: $A = \frac{x}{360^\circ} \cdot \pi r^2$
Volume	
Rectangular Prism: $V = \ell wh$	Cube: $V = s^3$
Prism: $V = Bh$	Pyramid: $V = \frac{1}{3}Bh$
Cylinder: $V = \pi r^2h$ $V = Bh$	Cone: $V = \frac{1}{3}Bh$ $V = \frac{1}{3}\pi r^2h$
Sphere: $V = \frac{4}{3}\pi r^3$	
Polygons	
Interior Angle Sum: $S = 180(n - 2)$	Measure of Exterior Angle of a Regular Polygon: $\frac{360^\circ}{n}$

ACP Formulas
Geometry/Geometry PAP
2020 – 2021

Coordinate Geometry

Midpoint:	$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
Distance:	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Slope of a Line:	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Slope-Intercept Form of a Line:	$y = mx + b$
Point-Slope Form of a Line:	$y - y_1 = m(x - x_1)$
Standard Form of a Line:	$Ax + By = C$
Equation of a Circle:	$(x - h)^2 + (y - k)^2 = r^2$

Trigonometry

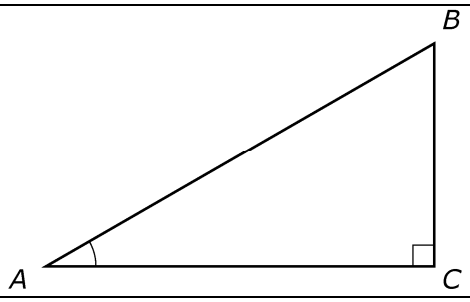
Pythagorean Theorem:	$a^2 + b^2 = c^2$

Trigonometric Ratios:

$$\sin A = \frac{\text{opposite leg}}{\text{hypotenuse}}$$

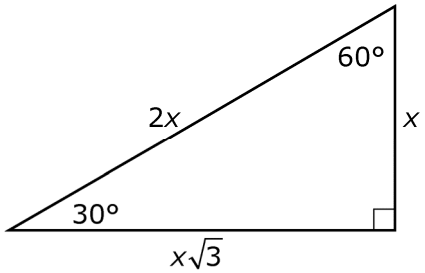
$$\cos A = \frac{\text{adjacent leg}}{\text{hypotenuse}}$$

$$\tan A = \frac{\text{opposite leg}}{\text{adjacent leg}}$$

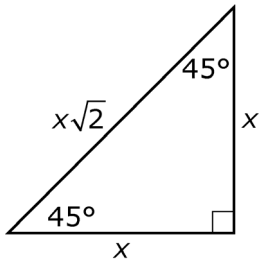


Special Right Triangles:

30° - 60° - 90°



45° - 45° - 90°



Law of Sines:	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
Law of Cosines:	$a^2 = b^2 + c^2 - 2bc \cos A$ $\quad b^2 = a^2 + c^2 - 2ac \cos B$ $\quad c^2 = a^2 + b^2 - 2ab \cos C$

Probability

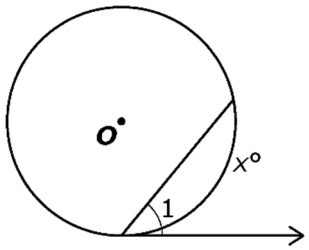
Permutations:	$_nP_r = \frac{n!}{(n-r)!}$	Combinations:	$_nC_r = \frac{n!}{(n-r)!r!}$
Circular Permutations:	$\frac{n!}{n}$ or $(n-1)!$	Permutations with Repetition:	$\frac{n!}{r_1! \cdot r_2! \cdot \ldots \cdot r_k!}$

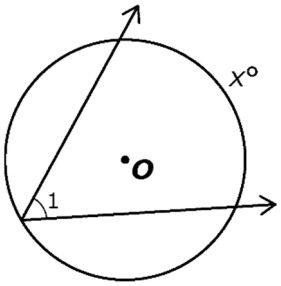
ACP Formulas
Geometry/Geometry PAP
2020 – 2021

Circles

ANGLES Created by Chords, Secants, and Tangents

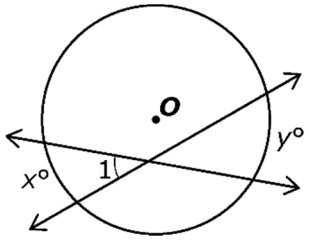
Vertex ON the Circle





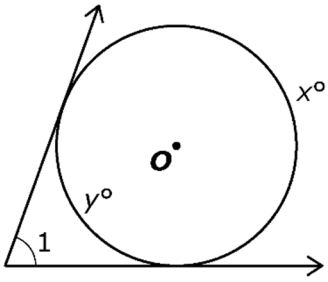
$m\angle 1 = \frac{1}{2}x$

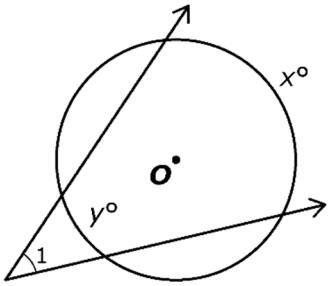
Vertex INSIDE the Circle

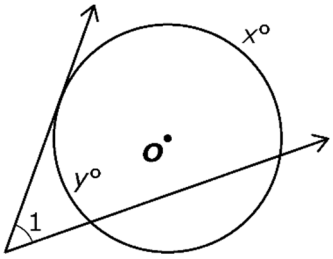


$m\angle 1 = \frac{1}{2}(x + y)$

Vertex OUTSIDE the Circle

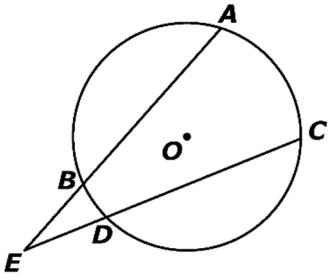




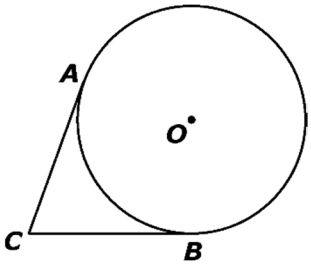


$m\angle 1 = \frac{1}{2}(x - y)$

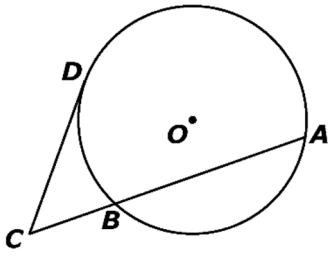
SEGMENTS Created by Chords, Secants, and Tangents



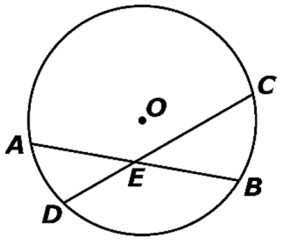
$AE \cdot BE = CE \cdot DE$



$AC = BC$



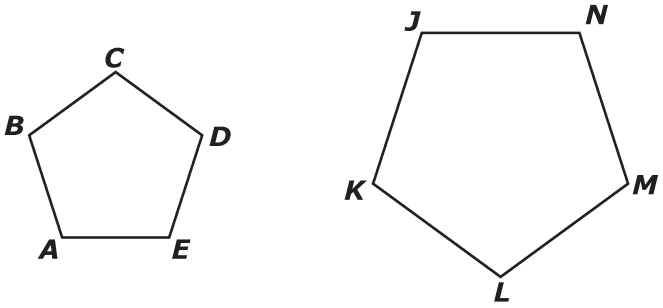
$AC \cdot BC = DC^2$



$AE \cdot EB = CE \cdot ED$

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

1 Pentagon *ABCDE* is similar to pentagon *JKLMN*.



Based on this information, which statement is true?

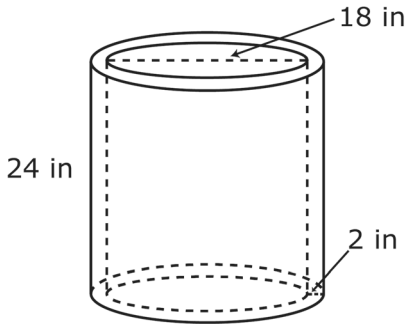
A $\frac{BA}{KJ} = \frac{DC}{ML}$

B $\frac{AE}{JN} = \frac{CD}{KL}$

C $\frac{BC}{DE} = \frac{JK}{LM}$

D $\frac{AB}{DE} = \frac{MN}{JK}$

2 A section of a large insulated hot water pipe is shown. This section is a 24-inch long cylinder with a diameter of 18 inches. The lateral surface is coated with foam that is 2 inches thick.



What is the approximate volume of the foam insulation?

A 1,460 cubic inches

B 3,016 cubic inches

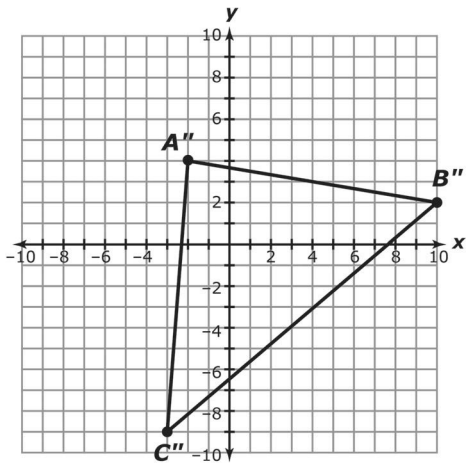
C 3,780 cubic inches

D 9,123 cubic inches

Dallas ISD - Example Items

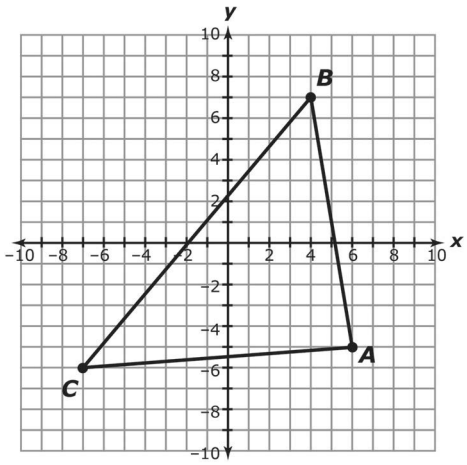
EXAMPLE ITEMS Geometry Pre-AP, Sem 2

3 Triangle *ABC* was translated using the rule $(x, y) \rightarrow (x - 3, y + 2)$ and then reflected across the line $y = x$ to produce $\Delta A''B''C''$.

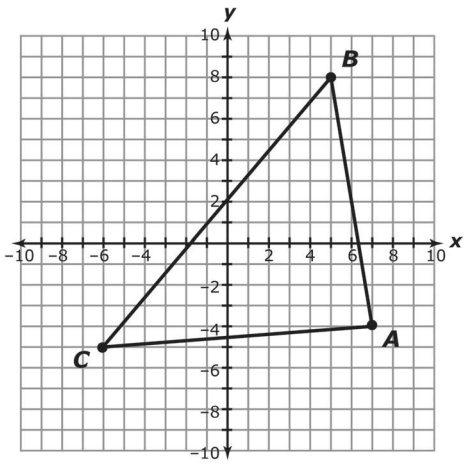


Which graph represents ΔABC ?

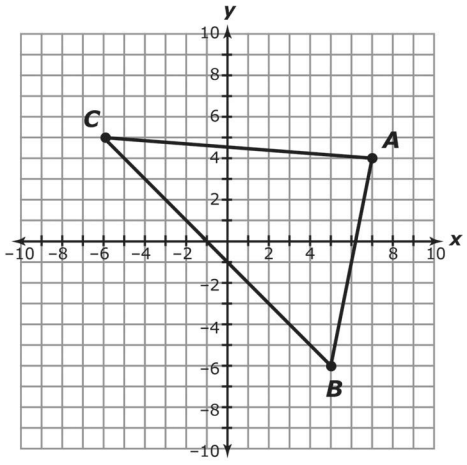
A



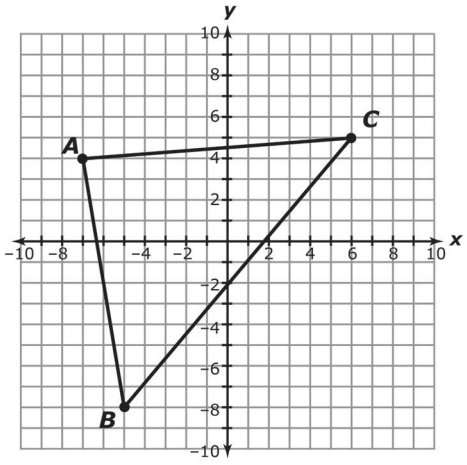
C



B



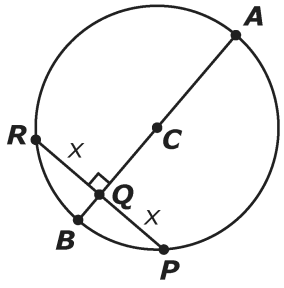
D



Dallas ISD - Example Items

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

4 In circle C, $\overline{RP} \perp \overline{AB}$, $BQ = 5$, and $AC = 14$.



Based on the information in the diagram, what is the approximate length of $\overline{RP}$?

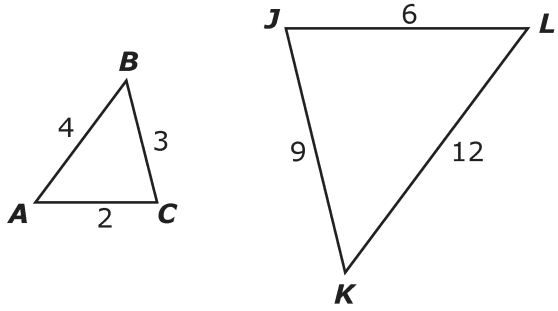
A 8.4

B 10.7

C 16.7

D 21.4

5 Two triangles are shown.



Based on the information in the diagram, which statement is true?

A $\triangle ABC \sim \triangle LKJ$, therefore $\overline{AB} \sim \overline{LK}$ and $\overline{AC} \sim \overline{LJ}$.

B $\triangle ABC \sim \triangle JKL$, therefore $\overline{AB} \sim \overline{LK}$ and $\overline{AC} \sim \overline{LJ}$.

C $\triangle ABC \sim \triangle JLK$, therefore $\overline{AB} \sim \overline{JL}$ and $\overline{AC} \sim \overline{JK}$.

D $\triangle ABC \sim \triangle LJK$, therefore $\overline{AB} \sim \overline{AC}$ and $\overline{LK} \sim \overline{LJ}$.

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

6 There are 12 teams participating in the Regional Robotics Competition. In how many ways can first, second, and third places be determined?

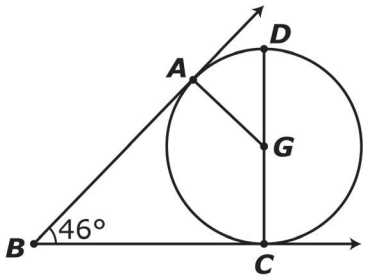
A 1,728

B 1,320

C 220

D 36

7 $\overrightarrow{BA}$ and $\overrightarrow{BC}$ are tangent to circle G, $\overline{CD}$ is a diameter, and $m\angle ABC = 46°$.



Based on this information, what is the measure of $\angle AGD$?

A 113°

B 67°

C 46°

D 23°

8 Alexa has a standard deck of 52 playing cards. What is the probability that Alexa will draw a queen then a king with replacement?

A $\frac{4}{663}$

B $\frac{1}{169}$

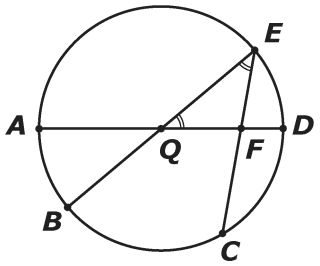
C $\frac{1}{121}$

D $\frac{3}{52}$

Dallas ISD - Example Items

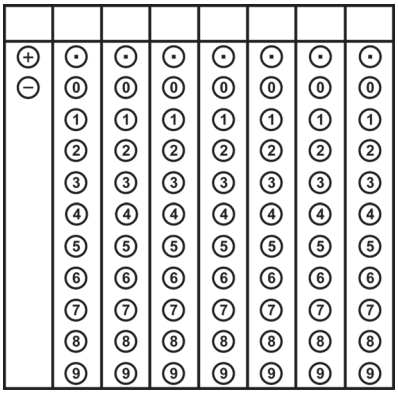
EXAMPLE ITEMS Geometry Pre-AP, Sem 2

9 In circle Q, $\overset{\frown}{AB}$ measures 40°, $\overline{AD}$ and $\overline{BE}$ are diameters, and $\angle EQF \cong \angle QEF$.

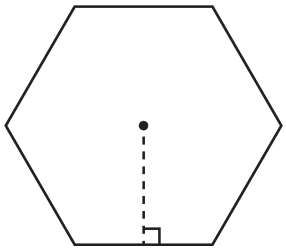


Based on this information, what is the measure of $\overset{\frown}{DC}$, in degrees?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.



10 The sides of a regular hexagon are 12 centimeters and the apothem is 10.4 centimeters.



What is the approximate area of the hexagon?

A 62.4 cm^2

B 124.8 cm^2

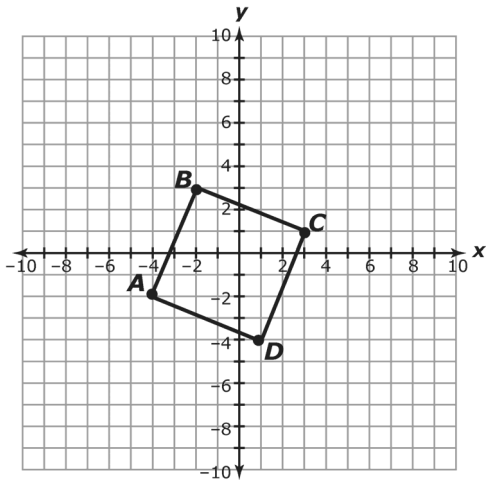
C 374.4 cm^2

D 748.8 cm^2

Dallas ISD - Example Items

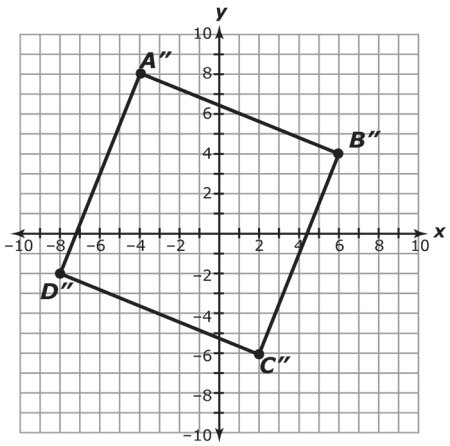
EXAMPLE ITEMS Geometry Pre-AP, Sem 2

11 Quadrilateral *ABCD* is shown on the coordinate grid.

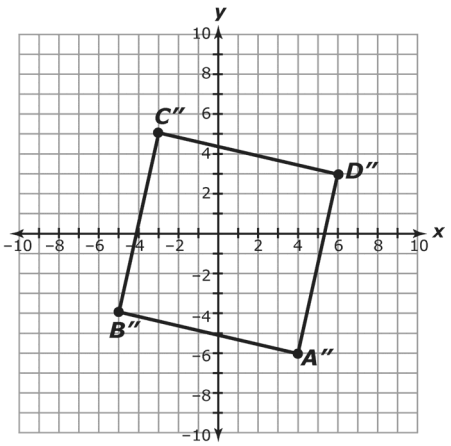


If quadrilateral *ABCD* is rotated 90° clockwise about the origin and then dilated by a scale factor of 2 with the origin as the center of dilation, which graph represents quadrilateral *A″B″C″D″*?

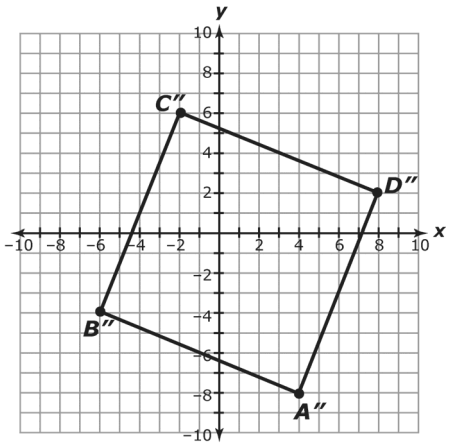
A



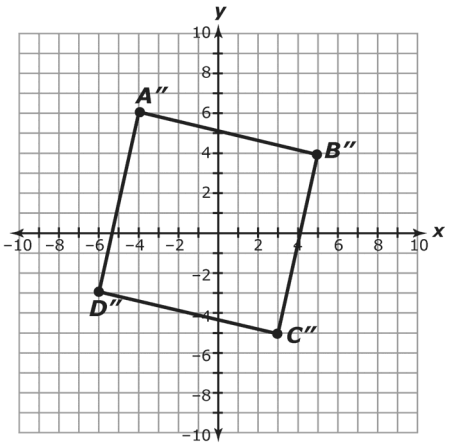
C



B

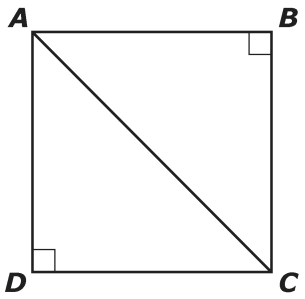


D



EXAMPLE ITEMS Geometry Pre-AP, Sem 2

12 In square *ABCD*, *AC* = 26 feet.



Based on this information, what is the perimeter of square *ABCD* ?

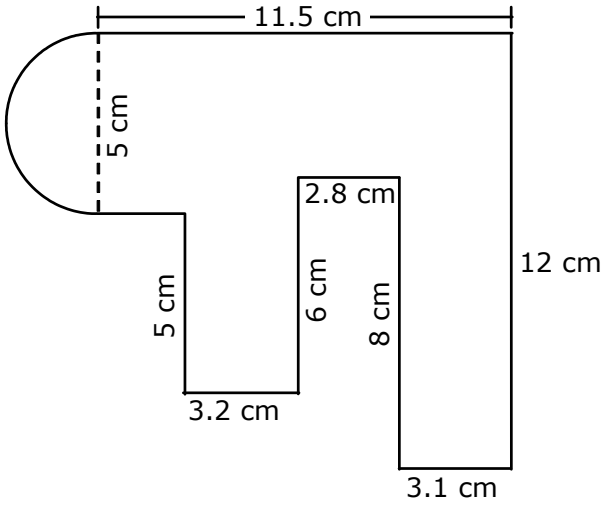
A $104\sqrt{2}$

B 104

C $52\sqrt{2}$

D 52

13 A composite figure is shown.



Based on the information in the diagram, what is the total area of the composite figure?

A 102.2 cm^2

B 112.0 cm^2

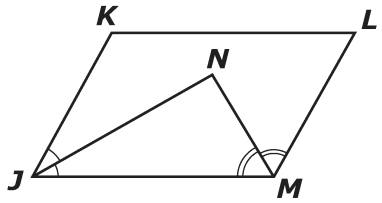
C 131.7 cm^2

D 170.9 cm^2

Dallas ISD - Example Items

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

14 In the figure, $\overline{KL} \parallel \overline{MJ}$ and $\overline{JK} \parallel \overline{LM}$.



If $m\angle NML = 52°$, what is the measure of $\angle JNM$?

A 38°

B 52°

C 76°

D 90°

15 Sally has 8 new pictures for her scrapbook. If she places four pictures on each page, what is the probability that pictures of Sam, Jaime, LaQuita, and Alexandra will be on the same page?

A $\frac{1}{1,680}$

B $\frac{1}{70}$

C $\frac{1}{8}$

D $\frac{1}{2}$

16 Sally has a hexagonal prism with a volume of 1,680 in^3. If she reduces the size of the hexagonal prism by a scale factor of $\frac{1}{2}$, which statement about Sally's new prism is true?

A The volume of the new prism is $\frac{1}{2}$ the volume of the original prism.

B The volume of the new prism is $\frac{1}{4}$ the volume of the original prism.

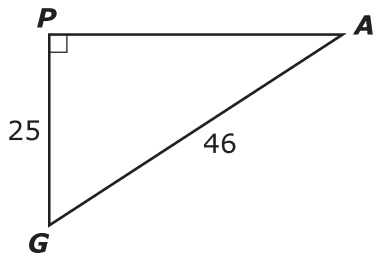
C The volume of the new prism is $\frac{1}{6}$ the volume of the original prism.

D The volume of the new prism is $\frac{1}{8}$ the volume of the original prism.

Dallas ISD - Example Items

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

17 Triangle *PGA* is shown.



Based on the information in the diagram, what is the approximate measure of $\angle PGA$?

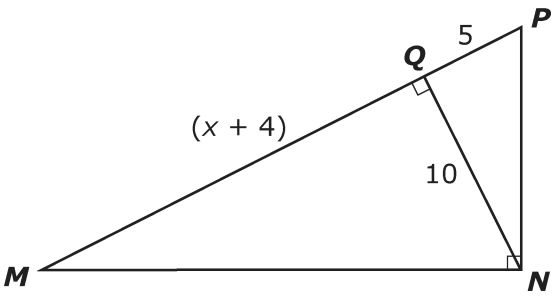
A 28.5°

B 32.9°

C 57.1°

D 61.5°

18 Triangle *MNP* is shown.



Based on the information in the diagram, what is the area of ΔMNP?

A 75

B 100

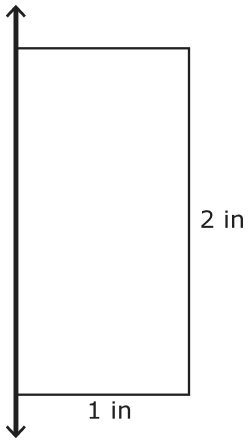
C 105

D 125

Dallas ISD - Example Items

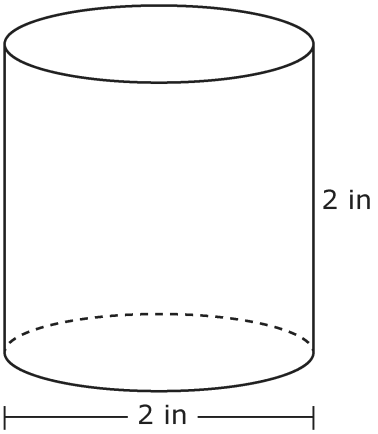
EXAMPLE ITEMS Geometry Pre-AP, Sem 2

19 A line intersects a rectangle as shown.

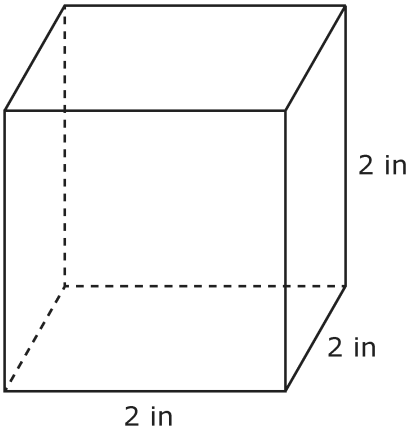


Which three-dimensional figure is formed by rotating the rectangle about the line?

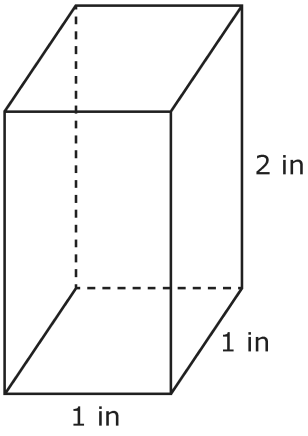
A



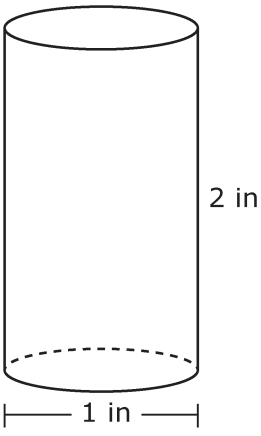
C



B

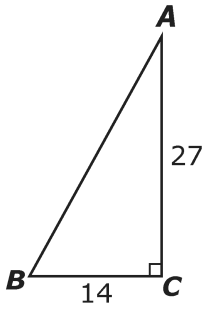


D



EXAMPLE ITEMS Geometry Pre-AP, Sem 2

20 Triangle *ABC* is shown.



Based on the information in the diagram, what is the approximate measure of $\angle B$?

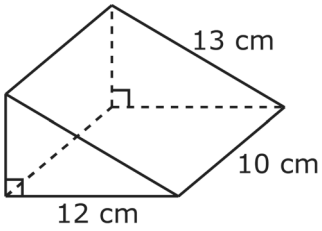
A 27.4°

B 30.4°

C 58.8°

D 62.6°

21 Joseph is wrapping a gift shaped like a triangular prism.



What is the least amount of wrapping paper Joseph needs to wrap the gift, in square centimeters?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.

⊕	⊙	⊙	⊙	⊙	⊙	⊙	⊙
⊖	⓪	⓪	⓪	⓪	⓪	⓪	⓪
	①	①	①	①	①	①	①
	②	②	②	②	②	②	②
	③	③	③	③	③	③	③
	④	④	④	④	④	④	④
	⑤	⑤	⑤	⑤	⑤	⑤	⑤
	⑥	⑥	⑥	⑥	⑥	⑥	⑥
	⑦	⑦	⑦	⑦	⑦	⑦	⑦
	⑧	⑧	⑧	⑧	⑧	⑧	⑧
	⑨	⑨	⑨	⑨	⑨	⑨	⑨

Dallas ISD - Example Items

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

22 A pizza was cut into 8 equal slices. Leslie ate 5 slices. If the diameter of the pizza was 16 inches, what was the area of the pizza that Leslie ate?

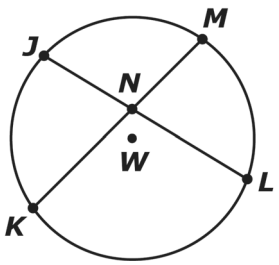
A 25.1 square inches

B 125.7 square inches

C 201.1 square inches

D 502.7 square inches

23 In circle W, $m\angle JNK = 67°$ and $m\overset{\frown}{KL} = 104°$.



Based on this information, what is the measure of $\overset{\frown}{JM}$?

A 86°

B 113°

C 122°

D 226°

24 Mr. Ibarra has a class with 10 boys and 14 girls. The main office asks him to send four students to help deliver books. What is the probability that Mr. Ibarra will send two boys and two girls?

A $\frac{35}{144}$

B $\frac{65}{1,012}$

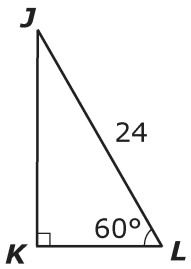
C $\frac{455}{9,216}$

D $\frac{1,225}{20,736}$

Dallas ISD - Example Items

EXAMPLE ITEMS Geometry Pre-AP, Sem 2

25 Triangle *JKL* is shown.



Based on the information in the diagram, what is the length of $\overline{JK}$?

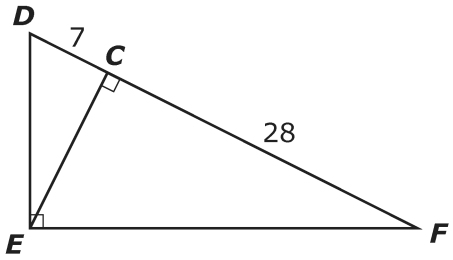
A 8

B $8\sqrt{3}$

C 12

D $12\sqrt{3}$

26 In the triangle *DEF*, $\overline{DE} \perp \overline{EF}$ and $\overline{EC} \perp \overline{DF}$.



Based on the information in the diagram, what is the approximate length of $\overline{DE}$?

A 12.1

B 15.7

C 19.3

D 27.1

Dallas ISD - Example Items

EXAMPLE ITEMS Geometry Pre-AP Key, Sem 2

Item#	Key	SE	SE Justification
1	A	G.7A	Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides.
2	B	G.11D	Apply the formulas for the volume of three-dimensional figures, including cylinders to solve problems using appropriate units of measure.
3	C	G.3B	Determine the pre-image of a given two-dimensional figure under a composition of rigid transformations.
4	D	G.5A	Investigate patterns to make conjectures about geometric relationships, including special segments of circles.
5	A	G.7A	Apply the definition of similarity in terms of a dilation to identify similar figures.
6	B	G.13A	Develop strategies to use permutations to solve contextual problems.
7	C	G.12A	Apply theorems about circles, including relationships among angles, radii, chords, [and] tangents to solve non-contextual problems.
8	B	G.13C	Compute the probability of two events occurring together with replacement.
9	60	G.12B	Apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems.
10	C	G.11A	Apply the formula for the area of regular polygons to solve problems using appropriate units of measure.
11	A	G.3B	Determine the image of a given two-dimensional figure under a composition of both rigid and non-ridged transformation.
12	C	G.9B	Apply special right triangles to solve problems.
13	A	G.11B	Determine the area of composite two-dimensional figures comprised of a combination of regular polygons, [and] sectors of circles to solve problems using appropriate units of measure.
14	D	G.6E	Prove a quadrilateral is a parallelogram and apply these relationships to solve problems.
15	B	G.13A	Develop strategies to use combinations to solve contextual problems.
16	D	G.10B	Describe how changes in the linear dimensions of a shape affect its volume, including proportional dimensional change.
17	C	G.9A	Determine the measures of angles in a right triangle by applying the trigonometric ratios, cosine, to solve problems.
18	D	G.8B	Apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle, including the geometric mean, to solve problems.
19	A	G.10A	Identify three-dimensional objects generated by rotations of twodimensional shapes.
20	D	G.9A	Determine the lengths of sides and measures of angles in a right triangle by applying the trigonometric ratio to solve problems.

Item#	Key	SE	SE Justification
21	360	G.11C	Apply the formulas for the lateral surface area of three-dimensional figures, including prisms to solve problems using appropriate units of measure.
22	B	G.12C	Apply the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems.
23	C	G.5A	Investigate patterns to make conjectures about geometric relationships, including special angles of circles.
24	B	G.13C	Compute the probability of two events occurring together without replacement.
25	D	G.9B	Apply the relationships in special right triangles 30°-60°-90° to solve problems.
26	B	G.8B	Apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle, including the geometric mean, to solve problems.