GSE-AG- Practice Test 2

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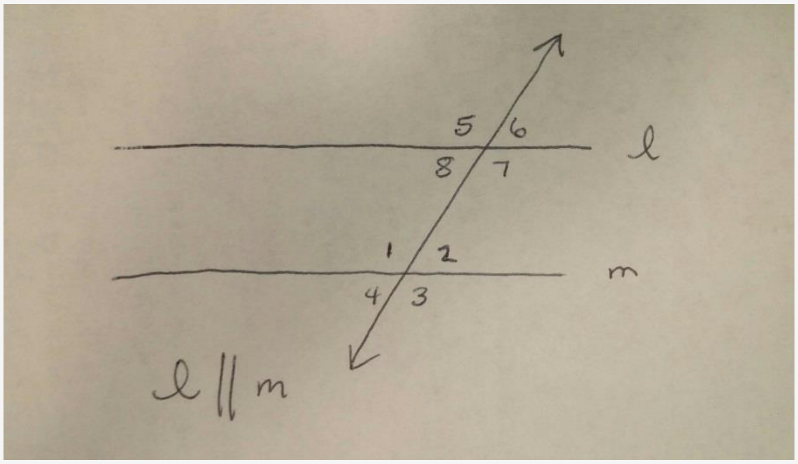
Name: **Date:**

Note: 1-5 problems are non-calculator problems

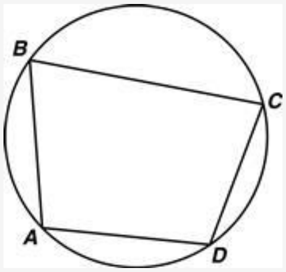
1.On a set of parallel lines cut by a transversal, $m\angle 2 = (7x-5)^0$ and $m\angle 6 = (x+25)^0$



Which value of *x* could show that $\angle 2$ and $\angle 6$ are corresponding angles, and why?

A.x=5; corresponding angles are congruent
B. x=20; corresponding angles are congruent
C. x=5; corresponding angles are supplementary
D. x=20; corresponding angles are supplementary

2.Quadrilateral ABCD is inscribed in a circle as shown below



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Which statement must be true?

A. AC is a diameter

B. $\angle A$ is a right angle

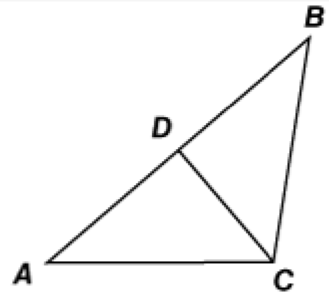
C. $\angle$A and $\angle$C are supplementary

D. Quadrilateral ABCD is trapezoid

3. A proof of the base angle theorem is shown

Given: $\overline{AC} \cong \overline{BC}$ and $\overline{CD} \perp \overline{AB}$

Prove: The base angles of $\triangle ABC$ are congruent.



Proof:

Statements	Reasons
1. $\overline{AC} \cong \overline{BC}$ and $\overline{CD} \perp \overline{AB}$	1. Given
2. ______________	2. Reflexive property
3. ______________	3. Definition of perpendicular lines
4. ______________	4. HL theorem
5. ______________	5. CPCTC

Which statements correctly complete the proof?

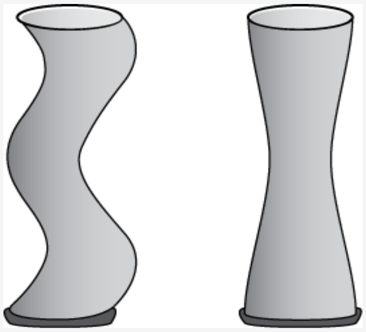
A. 2. $\overline{DC} \cong \overline{DC}$
3. $m\angle ADC = m\angle BDC = 90^0$
4. $\triangle DAC \cong \triangle DCA$
5. $\angle DAC \cong \angle DCA$

B. 2. $\overline{DC} \cong \overline{DC}$
3. $m\angle ADC = m\angle BDC = 90^0$
4. $\triangle DAC \cong \triangle DCA$
5. $\angle DAC \cong \angle DBC$

C. 2. $\overline{DC} \cong \overline{DC}$
3. $m\angle ADC = m\angle BDC = 90^0$
4. $\triangle ADC \cong \triangle BDC$
5. $\angle DAC \cong \angle DBC$

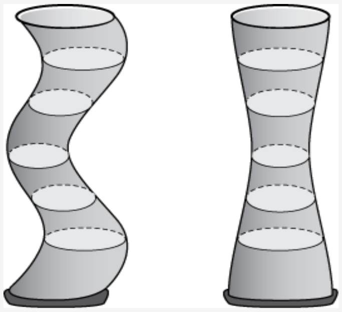
C. 2. $\overline{DC} \cong \overline{DC}$
3. $m\angle ADC = m\angle BDC = 90^0$
4. $\triangle ADC \cong \triangle BDC$
5. $\angle DAC \cong \angle DCA$

4.Two vases have the same height but are shaped differently as shown below.



How could the vases be sliced to use Cavalier's principle to show that their volumes are equivalent?

A.



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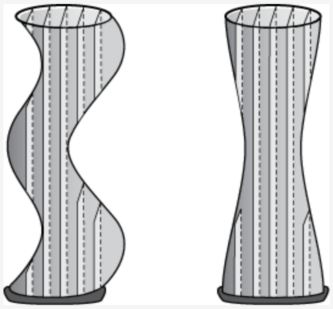
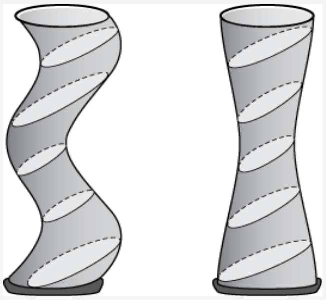
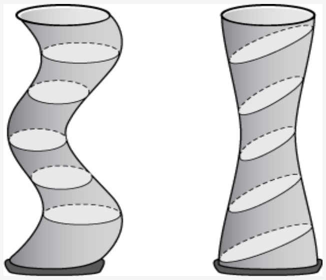


C…



D.



5. What is the center of the circle that has the equation shown?

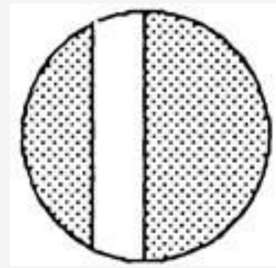
$$x^2 + y^2 - 6x + 8y - 24 = 0$$

A. (4, -3) B. (3, -4) C. (-3, 4) D. (-4, 3)

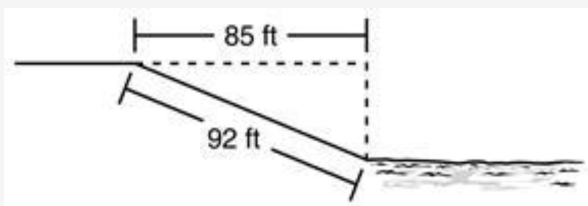
6. A circular grass plot 12 feet in diameter is cut by a straight gravel path 3 feet wide, one edge of which passes through the center of the plot. Find the number of square feet in the remaining grassy area. Give your answer in terms of π.

A. $30\pi - 9\sqrt{3}$ B. $30\pi + 9\sqrt{3}$

C. $36\pi + 9\sqrt{3}$ D. $36\pi - 9\sqrt{3}$



7. The horizontal distance on a survey map from the top edge of a riverbank to the river is 85 feet (ft) as shown in the diagram below.

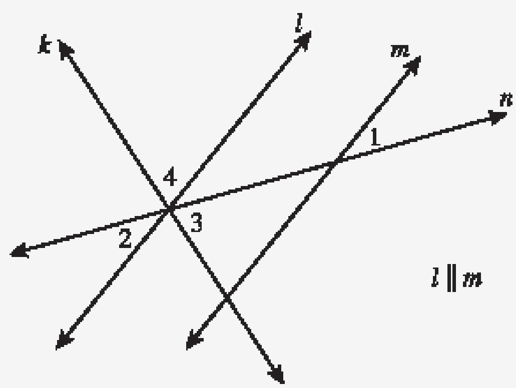


If the actual distance from the top edge of the riverbank to the surface of the river is 92 ft, which value is closest to the angle of depression from the horizontal distance?

A.23^0 B. 43^0 C. 47^0 D.68^0.

8. Consider the diagram and angle measures shown below.

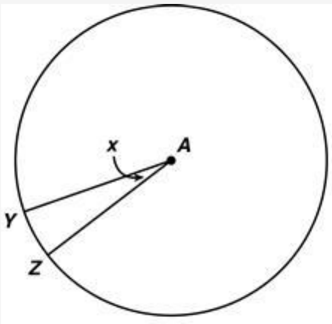
$m\angle 1 = (3x+25)^0, m\angle 2 = (7x+5)^0 . m\angle 3 = (-2x+70)^0$



What is the value of m<3?

$A. m\angle 3 = 40^0$ $B. m\angle 3 = 52^0$ $C. m\angle 3 = 60^0$ $D. m\angle 3 = 80^0$

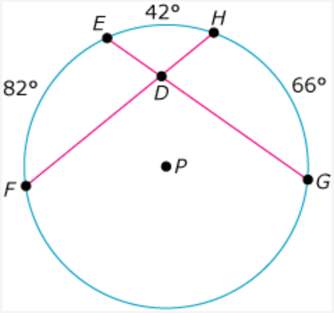
9. Arc *YZ* is formed by central Angle *YAZ* in Circle *A* below. If $x = 15$ degrees and the measure of Arc *YZ* is 3 centimeters, what is the circumference of the circle?



A.24cm B. 45cm

C.60cm D. 72cm

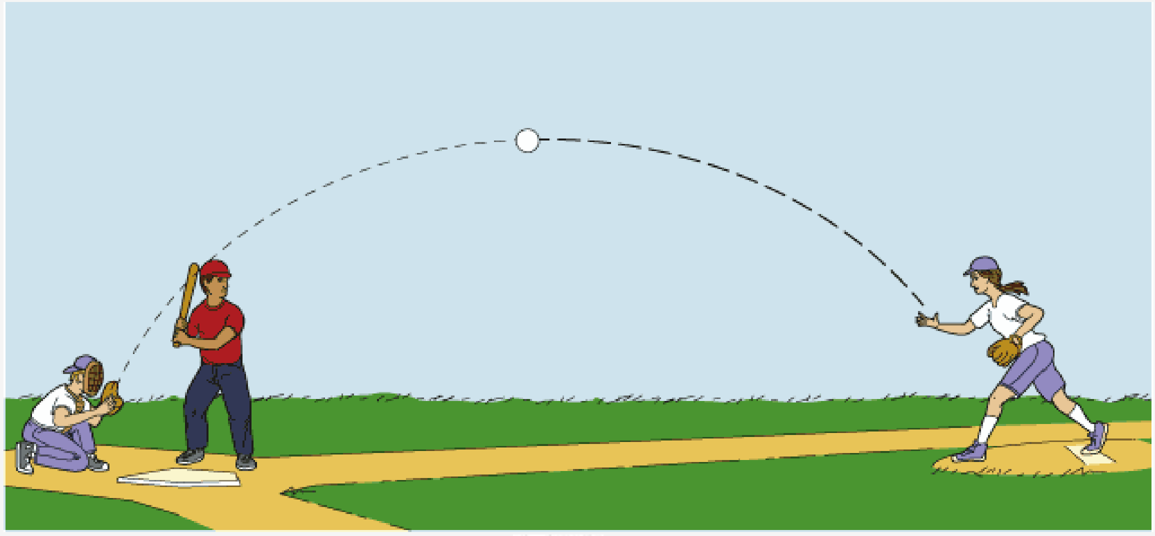
10. Points *E*, *F*, *G*, and *H* are on circle *P*, creating arcs with the measures shown. What is the measure of $\angle EDF$?



A.54^0 B. 62^0

C. 74^0 D. 106^0

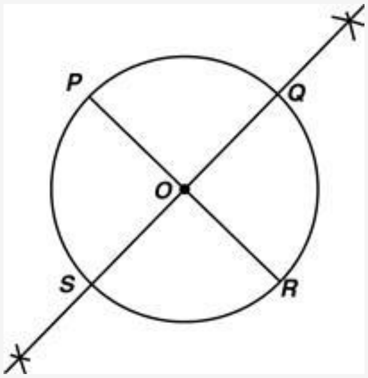
11. During softball practice, the pitcher tosses a slow pitch to the batter as shown below.



The height, in feet, of the softball at time $t \geq 0$seconds after it has been tossed is given by $s(t) = -16t^2 + 25t + 2.5$. Which is closest to the time when the softball will be 8 feet above the ground?

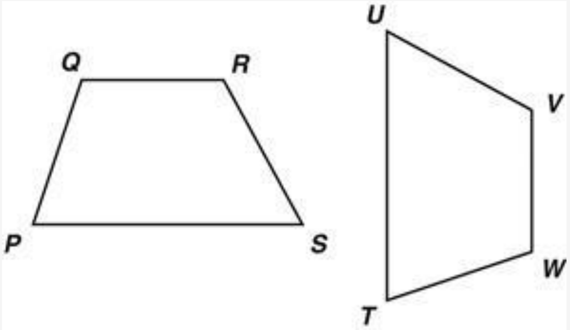
A.0.34 sec B.1.91 sec C. 0.26sec or 1.30sec D. 0.34sec or 1.91sec

12. Segment *PR* is a diameter of Circle *O*. The beginning steps of a construction are shown. Based on the construction, which statement is true?



A. Polygon PQRS is a Square
B. Polygon PQRS is a Trapezoid
C. Polygon QPR is an equilateral triangle
D. Polygon QRS is an acute isosceles triangle

13. In the diagram below, Quadrilateral *PQRS* is congruent to Quadrilateral *TWVU*. Which congruence statements below must be true?



A. $\overline{PQ} \cong \overline{TW}, \overline{QR} \cong \overline{WV}, \overline{RS} \cong \overline{VU}, \overline{SP} \cong \overline{UT}$
B. $\overline{PQ} \cong \overline{TU}, \overline{QR} \cong \overline{UV}, \overline{RS} \cong \overline{VW}, \overline{SP} \cong \overline{WT}$
C. $\overline{PQ} \cong \overline{TU}, \overline{QR} \cong \overline{TW}, \overline{RS} \cong \overline{VW}, \overline{SP} \cong \overline{VU}$
D. $\overline{PQ} \cong \overline{UV}, \overline{QR} \cong \overline{VW}, \overline{RS} \cong \overline{WT}, \overline{SP} \cong \overline{TU}$

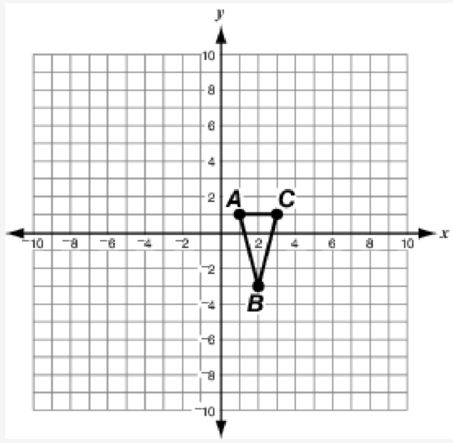
14. The table shows selected ordered pairs for a particular function, $f(x)$.

x	$f(x)$
–1	–24
2	–30
5	–18

The values shown in the table correspond to which function?

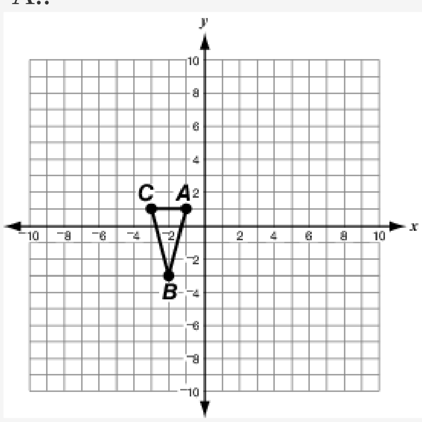
A. $f(x)=x^2-4x-29$
B. $f(x)=x^2-3x-28$
C. $f(x)=x^2+x-48$
D. $f(x)=x^2+2x-38$

15. The figure below shows ΔABC plotted on a coordinate plane. The triangle is first rotated by 90° counterclockwise about   origin and is then reflected about the line y = -x

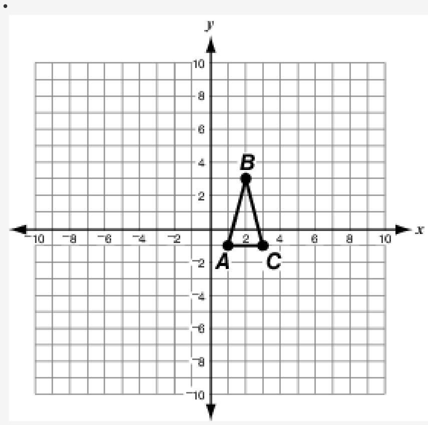


Which graph shows the transformed triangle?

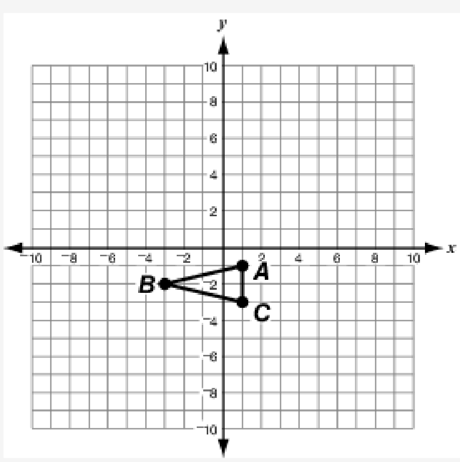
A..



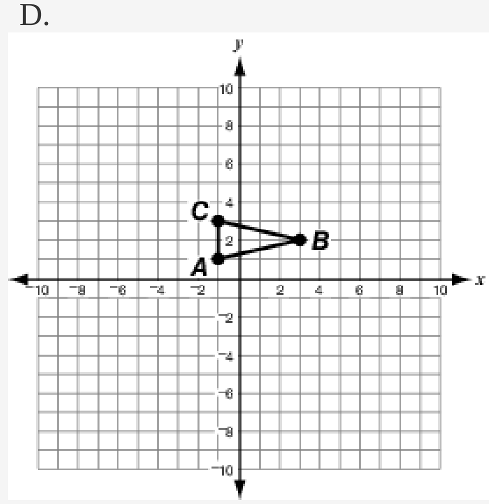
B.



C.



D.



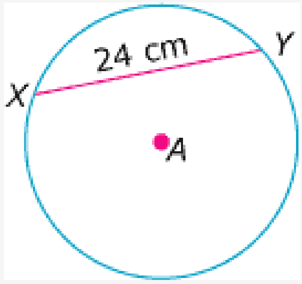
16. Circle *A* with chord $\overline{XY}$ is represented below. If the radius of circle *A* is 20 centimeters, what is the distance from the center of the circle to the chord?

A. 23.3 cm

B. 16 cm

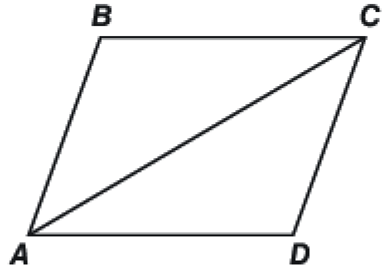
C. 13 cm

D. 10.4 cm



17. Use the given proof to answer the question below:

Given: *ABCD* is a parallelogram.



Statements	Reasons
1. *ABCD* is a parallelogram.	1. Given
2. $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$	2. Definition of parallelogram
3. $\angle BAC \cong \angle DCA$ and $\angle BCA \cong \angle DAC$	3. Alternate interior angles theorem
4. $\overline{AC} \cong \overline{AC}$	4. Reflexive property
5. $\triangle BAC \cong \triangle DCA$	5. ASA postulate
6. ______________________	6. ______________

What can be proven in step 6 of this proof?

I. The diagonals of this parallelogram bisect each other.

II. The opposite sides of this parallelogram are congruent.

III. Two opposite angles of this parallelogram are congruent.

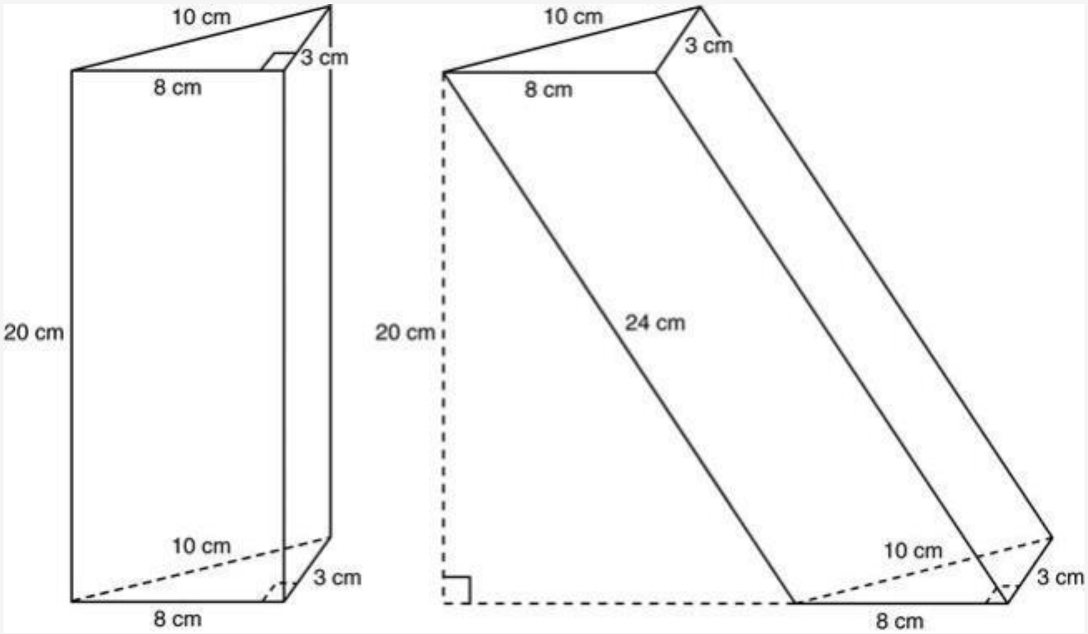
A. I only

B. III only

C. II and III only

D. I, II, and III

18. Emily drew the two prisms below and concluded that the second prism uses a different formula for computing its volume than the first prism.



Which statement justifies the correct conclusion?

A Emily is correct because the second prism uses the slant height in the formula for volume

B. Emily is correct because different shapes have different formulas for volume

C. Emily is not correct because all triangular prisms have equal volumes

D. Emily is not correct because the prisms have equal heights and cross-sectional areas

19. A ball made out of a special material is inflated such that its diameter changes from 14 inches to 18 inches. What is the approximate change in the volume of the ball?

A. 402.1 in^3 B. 1616.9 in^3 C. 3053.6 in^3 D. 12935.0 in^3.

20. For the path of a thrown basketball, the relationship between *x*, the horizontal distance the basketball is thrown, and *y*, the height of the ball (both measured in feet), can be modeled by $y = -(0.025)x^2 + 0.4x + 3.5$. When a basketball is thrown so that it rises 4 feet, what is its close horizontal distance?

A. 16 feet B. 15 feet C. 5 feet D.3.5 feet

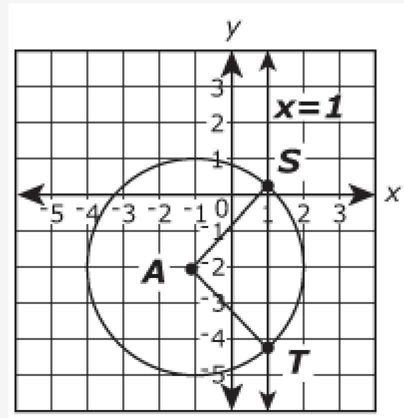
21. Point A, $(-1, -2)$, is the center of a circle that has a radius of 3. The line x=1 intersects the circle at point S and point T. What is the y-coordinate of point S?

A. $-3\sqrt{2}$

B. $3\sqrt{2}$

C. $-\sqrt{5}$ -2

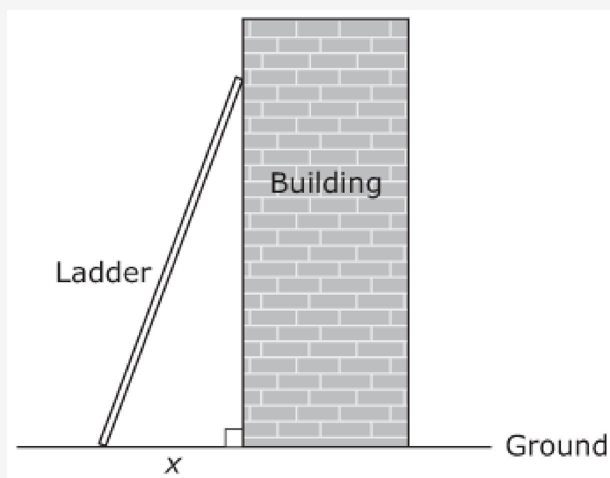
D. $\sqrt{5}$ -2



22. For which value of θ is the statement $\sin 40^0 = \cos\theta$ true?

A. 40^0 B. 50^0 C. 60^0 D. 140^0.

23. A worker must lean a 22-foot ladder against the side of a building. Safety rules for the ladder state that the angle of elevation between the ground and the ladder should be 70°.



Which equation should the worker use to determine x, the length between the base of the building and the base of the ladder?

A. $\sin 20^0 = \dfrac{x}{22}$ B. $\tan 70^0 = \dfrac{22}{x}$ C. $70^2 = 22^2 + x^2$ D. $\sqrt{70-22} = x$

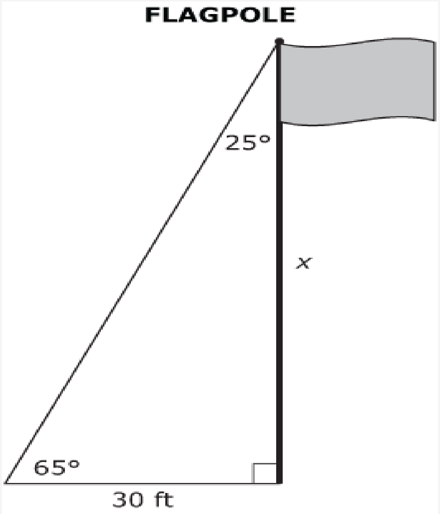
24. Two light poles of the same height are 100 ft apart. A point lies between the two poles such that the angle of elevation formed between the ground and the top of one of the poles is 75° and the angle of elevation formed between the ground and the top of the other pole is 50°.

Part A. What is the height of each pole? Show your work and round your answer to the nearest tenth.

Part B. How far is each pole from the point on the ground? Show your work and round your answers to the nearest tenth.

Use words, numbers, and/or pictures to show your work.

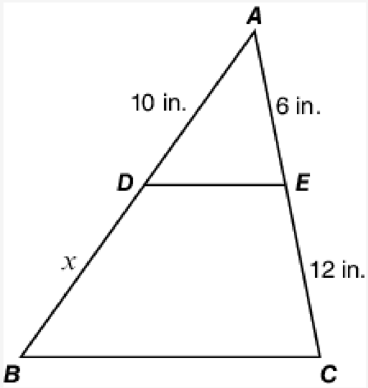
25. Two students measure the angle between the ground and the top of a flagpole at a distance of 30 feet from the base of the flagpole, as shown in the diagram.



Which equation could be used to find the height of the flagpole?

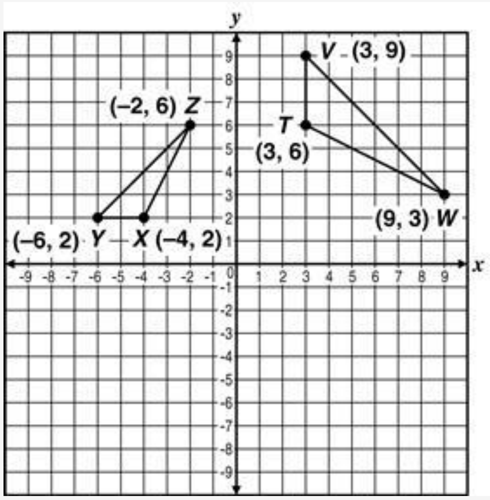
A. $\sin(65^0) = \frac{x}{30}$ B. $\cos(65^0) = \frac{x}{30}$ C. $\tan(65^0) = \frac{x}{30}$ D. $\sin(25^0) = \frac{30}{x}$

26. In the given ΔABC, $\overline{DE}$ parallel to $\overline{BC}$.What is the value of x?



A.10 B. 15 C. 20 D.30

27. On the coordinate grid below, $\triangle TVW$ and $\triangle XYZ$ are shown.



Which statement can be used to prove that $\triangle TVW \sim \triangle XYZ$?

A. $\triangle$ X Y Z is the result of a reflection and dilation of $\triangle$TVW, and all angle measures are preserved within these transformations

B.$\triangle$ X Y Z is the result of a rotation and dilation of $\triangle$TVW, and all angle measures are preserved within these transformations.

C.$\triangle$ X Y Z is the result of a translation and rotation of $\triangle$TVW, and all side lengths are preserved within these transformations.

D. $\triangle$ X Y Z is the result of a reflection and rotation of $\triangle$TVW, and all side lengths are preserved within these transformations.

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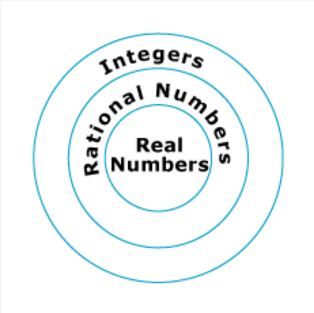
28. Which set of numbers includes $\sqrt{119}$?

A. Imaginary numbers   B. Integers   C. Irrational numbers   D. Natural Numbers

29. Which Venn diagram is valid?

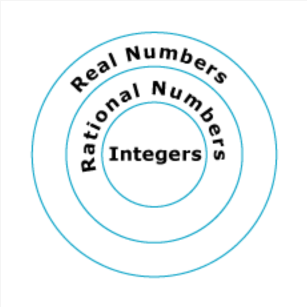
A.

B.



C.

D.



30. A toy rocket is launched with an initial velocity of 60 feet per second. The height of the rocket after *t* seconds is given by the formula below. $h(t) = -16t^2+60t$

Part A: Solve the quadratic equation for $h(t) = 70$. Show or explain your work.

Part B: Explain whether the rocket will reach a height of 70 feet or not, using information from your solution to Part A.

31. The table shows the results of a survey of 100 high school seniors on whether they attended a swimming competition at school.

School Swimming Competition

	Attended	Did Not Attend
Males	30	10
Females	20	40

If a senior is randomly selected from this sample, what is the probability that the senior was female given that the senior attended the swimming competition?

A. $\frac{1}{5}$ B. $\frac{1}{3}$ C. $\frac{2}{5}$ D. $\frac{11}{22}$

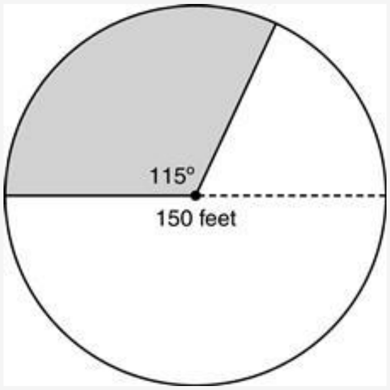
32. A diagnostic test to determine if a disease has been contracted is 98% accurate. The table below shows data about the diagnostic test for 100,000 people.

	Disease	No Disease	Total
Positive Result	284	1994	2288
Negative Result	6	97, 706	97, 712
Total	300	99, 700	100, 000

What is the chance, rounded to the nearest whole percent, that a person has the disease given that they have a positive test result?

A. 2% B. 13% C. 15% D. 98%

33. A security camera is set to record the activities in a 115° sector of a parking lot as represented by the shaded region of the circle below.



Which measurement is closest to the area of the parking lot recorded by this security camera?

A.5645 ft^2 B. 17, 671 ft^2 C. 22, 580 ft^2 D. 70, 686 ft^2.

34. The more people living in an area, the more likely it is that public buses will be used. City A has a population of 51,242 and covers an area of 89.22 mi^2. City B has a population of 50,178 and covers an area of 8.12 mi^2.

Which statement about use of public buses in the cities is most likely true?

A. The residents of City A are more likely to use public buses because their city has a greater population density.

B. The residents of City B are more likely to use public buses because their city has a greater population density.

C. The residents of both cities are equally likely to use public buses because both population densities are about the same.

D. The residents of both cities are unlikely to use public buses because both population densities are too high.

35. A ladder leaning against a wall makes an angle of 55° with the ground. If the foot of the ladder is 6.5 feet from the wall, what is the length of the ladder **to the nearest hundredth**?

A. 3.73 ft

B. 7.94 ft

C. 9.28 ft

D. 11.33 ft

Georgia Milestones Assessment System

Analytic Geometry Formula Sheet

Below are the formulas you may find useful as you work the problems. However, some of the formulas may not be used. You may refer to this page as you take the test.

Quadratic Formulas

Quadratic Equations

Standard Form: $y = ax^2 + bx + c$

Vertex Form: $y = a(x - h)^2 + k$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Average Rate of Change

The change in the *y*-value divided by the change in the *x*-value for two distinct points on a graph.

Geometry Formulas

Pythagorean Theorem

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

Trigonometric Relationships

$\sin\theta = \frac{opp}{hyp}$; $\cos\theta = \frac{adj}{hyp}$; $\tan\theta = \frac{opp}{adj}$

Equation of a Circle

$(x - h)^2 + (y - k)^2 = r^2$

Circumference of a Circle

$C = \pi d$ or $C = 2\pi r$

$\pi \approx 3.14$

Arc Length of a Circle

$\text{Arc Length} = \frac{2\pi r\theta}{360}$

Area of a Circle

$A = \pi r^2$

Area of a Sector of a Circle

$\textit{Area of Sector} = \frac{\pi r^2 \theta}{360}$

Volume

Cylinder $V = \pi r^2 h$

Pyramid $V = \frac{1}{3}Bh$

Cone $V = \frac{1}{3}\pi r^2 h$

Sphere $V = \frac{4}{3}\pi r^3$

Statistics Formulas

Conditional Probability

$P(A/B) = \frac{P(A \text{ and } B)}{P(B)}$

Multiplication Rule for Independent Events

$P(A \text{ and } B) = P(A) \cdot P(B)$

Addition Rule

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$