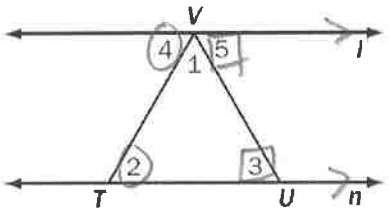
Geometry ~ EOC Practice Milestone Items Name A K

Item 1

Selected-Response: 1 point

In this figure, $l \| n$. Jessie listed the first two steps in a proof that shows $m\angle 1 + m\angle 2 + m\angle 3 = 180°$.



A I A

	Step	Justification
1	$\angle 2 \cong \angle 4$	?
2	$\angle 3 \cong \angle 5$	?

Which justification can Jessie give for Steps 1 and 2?

A. Alternate interior angles are congruent.
B. Corresponding angles are congruent.
C. Vertical angles are congruent.
D. Alternate exterior angles are congruent.

Item 2

Selected-Response: 1 point

The points $O(-4, 3)$, $A(x, y)$, and $B(x, 3)$ create a right triangle inside of Circle O. Point A lies on the circle. $OA = 6$ centimeters.

What is the equation of Circle O?

O is center (-4, 3)

OA = 6 radius

A lies on O.

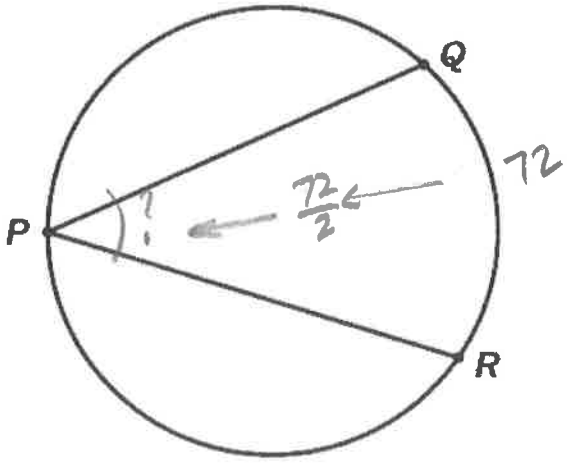
A. $(x + 4)^2 + (y - 3)^2 = 6$
B. $(x - 3)^2 + (y - 3)^2 = 6$
C. $(x - 3)^2 + (y + 4)^2 = 36$
D. $(x + 4)^2 + (y - 3)^2 = 36$

1 Δ signs

Item 3

Selected-Response: 1 point

In this circle, $m\overset{\frown}{QR} = 72°$.



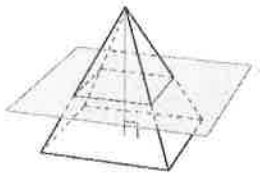
What is $m\angle QPR$?

A. 18°
B. 24°
C. 36°
D. 72°

Item 4

Selected-Response: 1 point

Look at the square pyramid.



If the plane in the figure is parallel to the base of the pyramid, which BEST describes the shape of the intersection?

A. a rectangle
B. a trapezoid
C. a triangle
D. a circle

Item 5

Selected-Response: 1 point

This diagram shows two ladders leaning against a building. Each ladder is leaning at an angle of 70 degrees.

- The length of the short ladder is 8 feet.
- The base of the long ladder is 5 feet farther from the base of the building than the base of the short ladder is.

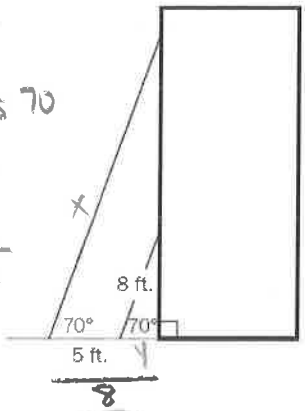
$\cos 70 = \frac{y}{8}$

$y = 8 \cdot \cos 70$

$y \approx 3$ ft

$\cos 70 = \frac{8}{x}$

$x = \frac{8}{\cos 70}$



What is the length, to the nearest foot, of the long ladder?

$\sin 70° = 0.9397$
$\cos 70° = 0.3420$
$\tan 70° = 2.7475$

A. 10 ft.
B. 13 ft.
C. 23 ft.
D. 26 ft.

Item 6

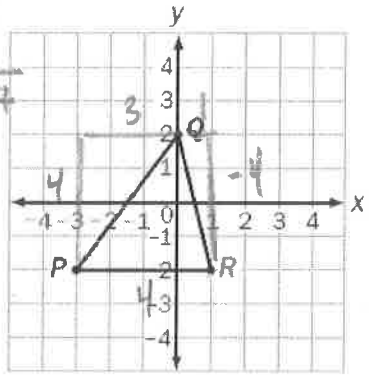
Selected-Response: 1 point

Look at the coordinate grid below.

$\overline{PQ} = \sqrt{16+9} = 5$

$\overline{RQ} = \sqrt{1+16} = \sqrt{17}$

$P = 4 + 5 + \sqrt{17}$



What is the perimeter of $\triangle PQR$?

A. $4 + \sqrt{42}$
B. 14
C. $9 + \sqrt{17}$
D. 17

Item 7

Selected-Response: 1 point

Look at the coordinates of square *ABCD*.

- *A*(–3, 0)
- *B*(2, 4)
- *C*(6, –1)
- *D*(1, –5)

$AB = \sqrt{(5)^2 + (-4)^2}$

$= \sqrt{25+16}$

$= \sqrt{41}$

What is the perimeter of square *ABCD*?

A. 20 units
B. $4\sqrt{41}$ units
C. $2\sqrt{82}$ units
D. 41 units

$4 \times \sqrt{41}$

Item 8

Selected-Response: 1 point

Paul has a spinner with the colors red, green, blue, orange, and purple on it. He also has a six-sided number cube.

The probability of the arrow of the spinner stopping on green is $\frac{1}{5}$ and the probability of getting a number greater than 2 when tossing the number cube is $\frac{4}{6}$.

What is the probability of landing on green and tossing a number greater than 2?

A. $\frac{2}{15}$

B. $\frac{3}{10}$

C. $\frac{7}{10}$

D. $\frac{13}{15}$

$P(G \cap \#>2)$

$\frac{1}{5} \times \frac{4}{6} = \frac{4}{30} = \frac{2}{15}$

Item 9

Technology-Enhanced: 2 points

Triangle *ABC* is similar but not congruent to triangle *DEF*.

Part A

Which series of transformations could map triangle *ABC* onto triangle *DEF*?

A. translation 4 units up, rotation 75° about the origin

B. reflection across the line $y = 2$, rotation 90° about the origin

C. translation 3 units left, dilation of scale factor 2 centered at the origin

D. reflection across the line $x = 1$, reflection across the line $y = 5$

Part B

Which equation must be true about triangle *ABC* and triangle *DEF*?

A. $AB = DE$

B. $AC = EF$

C. $m\angle A + m\angle B = m\angle D + m\angle F$

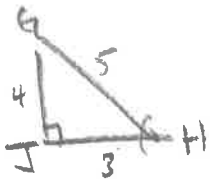
D. $m\angle A + m\angle C = m\angle D + m\angle F$

$\triangle ABC \quad \triangle DEF$

Item 10

Technology-Enhanced: 2 points

Triangle *GHJ* is a right triangle. Angle *G* has a measure of $g°$, angle *H* has a measure of $h°$, and angle *J* is a right angle.



Part A

Select TWO equations that must be true.

A. $\sin(h°) = \sin(g°)$

B. $\cos(g°) = \sin(h°)$

C. $\cos(h°) = \cos(g°)$

D. $\sin(h°) + \cos(h°) = \sin(g°) + \cos(g°)$

E. $\sin(g°) + \cos(h°) = \cos(g°) + \sin(h°)$

$\frac{4}{5} + \frac{3}{5} = \frac{3}{5} + \frac{4}{5}$

Part B

Given that $\tan(g°) = \frac{\sin(g°)}{\cos(g°)}$, which ratio must have a value equivalent to the tangent of $g°$?

A. $\frac{\cos(h°)}{\sin(g°)}$

B. $\frac{\cos(h°)}{\sin(h°)}$

C. $\frac{\sin(h°)}{\cos(h°)}$

D. $\frac{\sin(h°)}{\cos(g°)}$

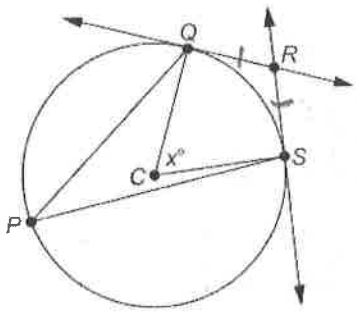
$\frac{\sin g \ \frac{3}{5}}{\cos g \ \frac{4}{5}} = \frac{\cos h \ \frac{3}{5}}{\sin h \ \frac{4}{5}}$

reciprocal of complement

Item 11

Technology-Enhanced: 2 points

The figure shows circle *C* with tangent lines $\overleftrightarrow{QR}$ and $\overleftrightarrow{SR}$.



The measure of $\angle QCS$ is $x°$.

Select THREE statements that are true about the figure.

A. The measure of $\angle QPS$ is $(90 - x)°$.

B. The measure of $\angle QPS$ is $\frac{1}{2}x°$.

C. The measure of $\angle PSR$ is 90°.

D. The measure of $\angle CQR$ is 90°.

E. The measure of $\angle QRS$ is $(180 - x)°$.

F. The measure of $\angle QRS$ is $2x°$.

inscribed = $\frac{\text{arc}}{2}$

radius 90° to tangent

$\angle Q$ & $\angle S$ are = 90°

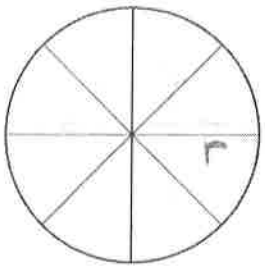
360 − 180 = 180°

$x°$ & $\angle R$ are supplements

Item 12

Constructed-Response: 2 points

Billy is creating a circular garden divided into 8 equal sections. The diameter of the garden is 12 feet.



What is the area, in square feet, of one section of the garden? Use $\pi = 3.14$. Explain how you determined your answer. Write your answer on the lines provided.

All 8 sections have the same area.

$A_{OS} = 1/8 (3.14)(6)^2$

$1/8 (36)(3.14) \approx 14.13 Ft^2$

Using 1/8 is easier than finding the central θ.

Item 13

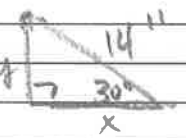
Extended Constructed-Response: 2 points

Jane and Mark each build ramps to jump their remote-controlled cars.

Both ramps are right triangles when viewed from the side. The incline of Jane's ramp makes a 30-degree angle with the ground, and the length of the inclined ramp is 14 inches. The incline of Mark's ramp makes a 45-degree angle with the ground, and the length of the inclined ramp is 10 inches.

Part A: What is the horizontal length of the base of each ramp? Explain how you found your answers. Write your answers on the lines provided.

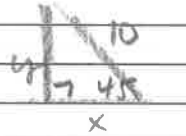
$\sin 30° = 0.5000$	$\sin 45° = 0.7071$
$\cos 30° = 0.8660$	$\cos 45° = 0.7071$
$\tan 30° = 0.5774$	$\tan 45° = 1.0000$



Jane

$\cos 30 = x/14$

$x = 12.12$ in



Mark

$\cos 45 = x/10$

$x = 7.07$ in

X is the horizontal distance of each ramp

Part B: Which car is launched from the highest point? Explain your reasoning. Write your answer on the lines provided.

Jane

$\sin 30 = y/14$

$y = 14 \cdot \sin 30$

$y = 7$

Mark

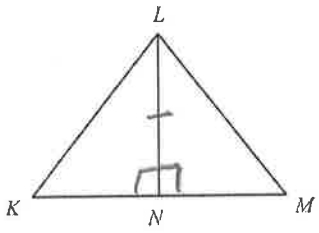
$\sin 45 = y/10$

$y = 10 \cdot \sin 45$

$y = 7.07$

Mark's car launched from a higher pt.

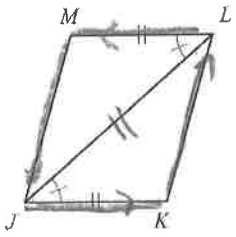
1 In this figure, $\overline{LN} \perp \overline{KM}$.



What information would a student need to prove $\triangle KLN \sim \triangle MLN$?

A $\angle LKN \cong \angle LMN$
B $\angle LNK \cong \angle LNM$
C $\angle KLN \cong \angle LNM$
D $\angle LKN \cong \angle NLM$

2 This figure shows quadrilateral $JKLM$.



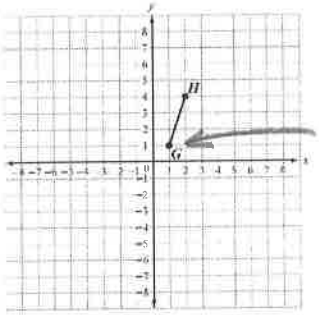
What information will NOT be used to prove that $JKLM$ is a parallelogram?

A Show that $\angle JLM \cong \angle LJK$.
B Show that $\overline{JK} \cong \overline{LM}$.
C Show that $\triangle JKL \cong \triangle LMJ$.
D Show that $\triangle JKL \cong \triangle JLM$.

4 Which transformation of $\triangle HIJ$ does NOT result in a congruent triangle?

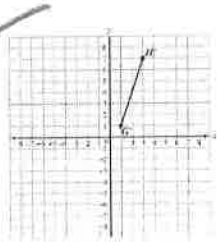
A a reflection across the x-axis, followed by a rotation of 180° about the origin
B a rotation by 180° about the origin, followed by a translation of 2 units left and 3 units down
C a translation of 1 unit right and 2 units up, followed by a dilation by a factor of 3
D a dilation by a factor of 2, followed by a dilation by a factor of 0.5

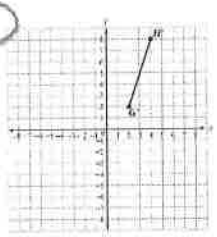
3 Which figure represents the dilation of segment GH about the origin by a scale factor of 2?

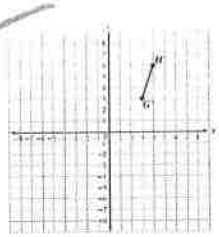


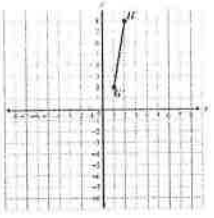
$2\left(\frac{1}{1}\right) = \frac{2}{2}$

$2\left(\frac{3}{4}\right) = \frac{4}{8}$

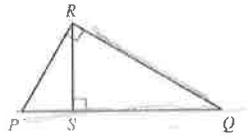
A


B


C


D


5 Use this triangle to answer the question.



This is a proof of the Pythagorean theorem.

	Step	Justification
1	$\triangle PQR \sim \triangle RPS \sim \triangle QSR$	AA postulate
2	$\frac{PQ}{QR} = \frac{QR}{SQ}$ and $\frac{PQ}{PR} = \frac{PR}{PS}$	Corresponding sides of similar triangles are congruent
3	$QR^2 = PQ \cdot SQ$ and $PR^2 = PQ \cdot PS$	Multiplication property of equality
4	$QR^2 + PR^2 = PQ \cdot SQ + PQ \cdot PS$	Addition property
5	$QR^2 + PR^2 = PQ(SQ + PS)$	Distributive property
6	$QR^2 + PR^2 = PQ(PQ)$	Segment addition postulate
7	$QR^2 + PR^2 = PQ^2$	Simplify

In which step is there a mistake in the proof?

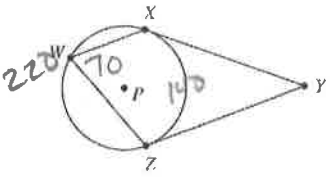
A Step 1
B Step 2
C Step 4
D Step 6

6 Use line segment $\overline{HI}$ to answer the question.

Which step should be first to draw a line perpendicular to $\overline{HI}$ at point J?

A Place the compass on point H and set its width to less than $\overline{HJ}$.
B Place the compass on point H and set its width to more than $\overline{HJ}$.
C Place the compass on point J and set its width to less than $\overline{HI}$.
D Place the compass on point J and set its width to more than $\overline{HI}$.

8 Circle P has tangents $\overline{XY}$ and $\overline{ZY}$ and chords $\overline{WX}$ and $\overline{WZ}$, as shown in this figure. The measure of $\angle ZWX = 70°$.



What is the measure, in degrees, of $\angle XYZ$?

A 20°
B 35°
C 40°
D 55°

$\frac{220 - 140}{2}$

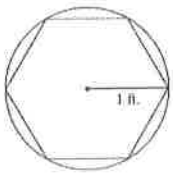
7 Which polygon inscribed in a circle has an area closest to π square feet?

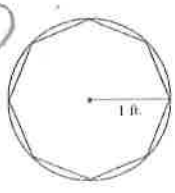
A


B


$\frac{80}{2}$

πr^2

C


D


$\pi(1)^2 = \pi$

with more sides compared to C, its area gets closer to π

10 The graph of a circle has its center at (2, 3) with a radius of 10 units. Which point does NOT lie on the circle?

A $(-4, -5)$
B $(8, 11)$
C $(-2, 6)$
D $(-4, 11)$

$(x-2)^2 + (y-3)^2 = 10^2$
$(-2-2)^2 + (6-3)^2 = 100$
$(-4)^2 + (3)^2 \neq 100$
$16 + 9 \neq 100$

11 In soccer, a shutout is a game where the winning team does not allow the other team to score a goal.

If the set W represents all wins, and S represents all shutouts, which set describes the set of shutout wins?

A $W \cap S$
B $W \cup S$
C $W \cap S'$
D $(W \cup S)'$

Wins and Shutouts

12 Which two-way frequency table shows that $P(W \mid Y) = 0.25$?

A

	Event Y	Event Z	Total
Event W	12	24	36
Event X	36	28	64
Total	48	52	100

$\frac{12}{48}$

B

	Event Y	Event Z	Total
Event W	12	36	48
Event X	26	26	52
Total	38	62	100

C

	Event Y	Event Z	Total
Event W	25	21	46
Event X	12	42	54
Total	37	63	100

D

	Event Y	Event Z	Total
Event W	10	26	36
Event X	40	24	64
Total	50	50	100

13 Which is an equation for the circle with a center at (–2, 3) and a radius of 3?

A. $x^2 + y^2 + 4x - 6y + 22 = 0$
B. $2x^2 + 2y^2 + 3x - 3y + 4 = 0$
C. $x^2 + y^2 + 4x - 6y + 4 = 0$
D. $3x^2 + 3y^2 + 4x - 6y + 4 = 0$

$(x+2)^2 + (y-3)^2 = 9$
$x^2 + 4x + 4 + y^2 - 6y + 9 = 9$

14 What is the center of the circle given by the equation $x^2 + y^2 - 10x - 11 = 0$?

A. (5, 0)
B. (0, 5)
C. (–5, 0)
D. (0, –5)

$\frac{-10}{2}$
$(x-5)^2$
(5, 0)

15 Bianca spins two spinners that have four equal sections numbered 1 through 4. If she spins a 4 on at least one spin, what is the probability that the sum of her two spins is an odd number?

A. $\frac{1}{4}$
B. $\frac{7}{16}$
C. $\frac{4}{7}$
D. $\frac{11}{16}$

P(Sum odd | 4)

1,1 1,2 1,3 1,4
2,1 2,2 2,3 2,4
3,1 3,2 3,3 3,4
4,1 4,2 4,3 4,4

$\frac{4}{7}$

16 Each letter of the alphabet is written on a card using a red ink pen and placed in a container. Each letter of the alphabet is also written on a card using a black ink pen and placed in the same container. A single card is drawn at random from the container. What is the probability that the card has a letter written in black ink, the letter A, or the letter Z?

A. $\frac{1}{2}$
B. $\frac{7}{13}$
C. $\frac{15}{26}$
D. $\frac{8}{13}$

26 R + 26 B
Blk Ltr A Ltr Z overlap
$\frac{26}{52} + \frac{2}{52} + \frac{2}{52} - \frac{2}{52}$

$\frac{28}{52} = \frac{7}{13}$