VIRGINIA STANDARDS OF LEARNING

Spring 2008 Released Test

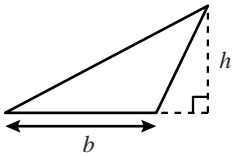
END OF COURSE GEOMETRY

Form M0118, CORE 1

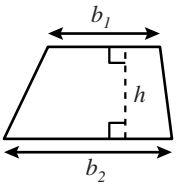
This released test contains 1 fewer test item (#1– 44 only)
than an original SOL EOC Geometry test.

Geometry Formula Sheet

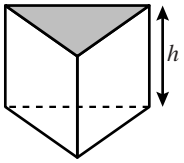
Geometric Formulas



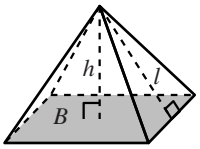
$A = \frac{1}{2}bh$



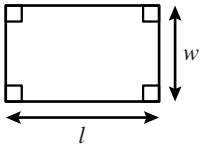
$A = \frac{1}{2}h(b_1 + b_2)$



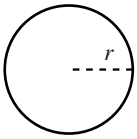
$V = Bh$
$L.A. = hp$
$S.A. = L.A. + 2B$



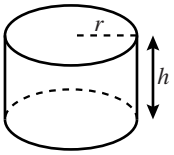
$V = \frac{1}{3}Bh$
$L.A. = \frac{1}{2}lp$
$S.A. = L.A. + B$



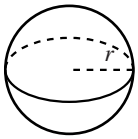
$A = lw$
$p = 2(l + w)$



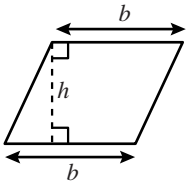
$A = \pi r^2$
$C = 2\pi r$



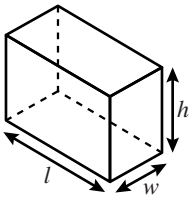
$V = \pi r^2 h$
$L.A. = 2\pi rh$
$S.A. = 2\pi r(h + r)$



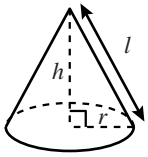
$V = \frac{4}{3}\pi r^3$
$S.A. = 4\pi r^2$



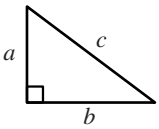
$A = bh$



$V = lwh$
$S.A. = 2lw + 2lh + 2wh$



$V = \frac{1}{3}\pi r^2 h$
$L.A. = \pi rl$
$S.A. = \pi r(l + r)$



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

Geometric Symbols

Example	Meaning
$\angle A$	angle A
$m\angle A$	measure of angle A
$\overline{AB}$	line segment AB
AB	measure of line segment AB
$\overleftrightarrow{AB}$	line AB
$\triangle ABC$	triangle ABC
$\square ABCD$	rectangle $ABCD$
$\square ABCD$	parallelogram $ABCD$

Example	Meaning
$\overrightarrow{AB}$	vector AB
	right angle
$\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$	Line AB is parallel to line CD.
$\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$	Line AB is perpendicular to line CD.
$\angle A \cong \angle B$	Angle A is congruent to angle B.
$\triangle A \sim \triangle B$	Triangle A is similar to triangle B.
	Similarly marked segments are congruent.
	Similarly marked angles are congruent.

Abbreviations

Volume	V
Lateral Area	$L.A.$
Total Surface Area	$S.A.$
Area of Base	B

Pi

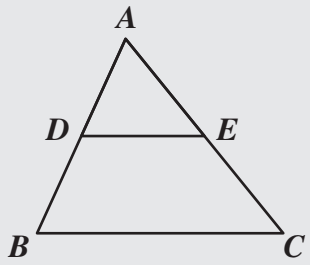
$\pi \approx 3.14$

$\pi \approx \frac{22}{7}$

Directions

Read each question and choose the best answer. Then fill in the circle on your answer document for the answer you have chosen.

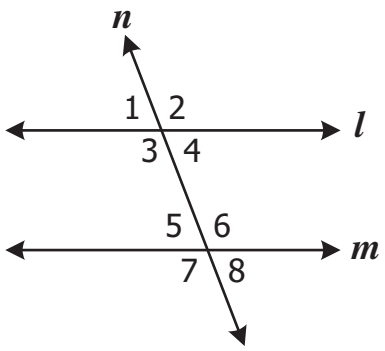
SAMPLE



If $\triangle ABC$ is similar to $\triangle ADE$, then $AB : AD = ? : AE$. Which replaces the "?" to make the statement true?

A AC
B AE
C DE
D BC

1 Lines l and m are cut by transversal n.



Which statement would prove $l \parallel m$?

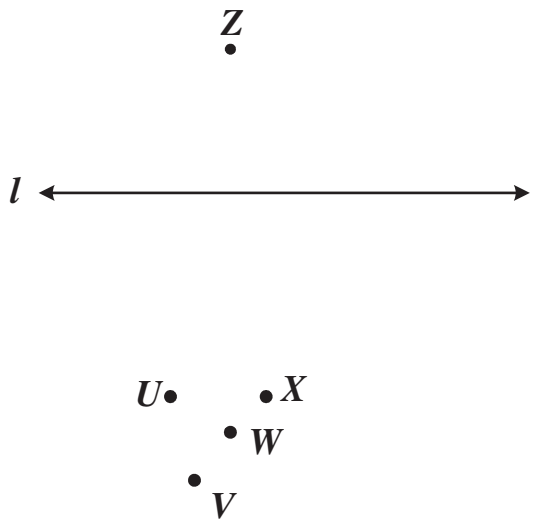
A $m\angle 2 = m\angle 6$

B $m\angle 2 = m\angle 3$

C $m\angle 7 + m\angle 8 = 180°$

D $m\angle 3 + m\angle 5 = 90°$

2

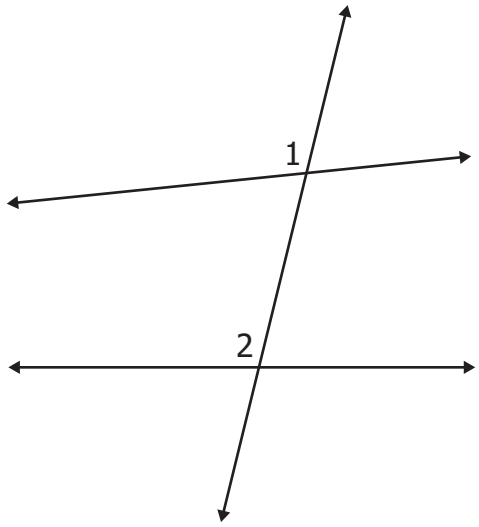


Which point is on the line $\perp$ to l and passing through Z ?

F U
G V
H W
J X

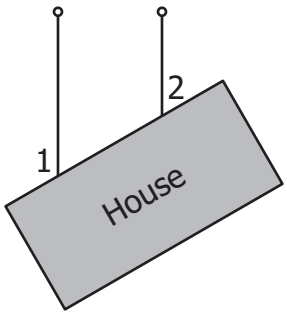
GO ON

3 In this figure, two lines are cut by a transversal. Which type of angles are $\angle 1$ and $\angle 2$?



A Vertical angles
B Corresponding angles
C Alternate interior angles
D Same-side interior angles

4 Sally is using strings to mark parallel rows for a vegetable garden behind her house.

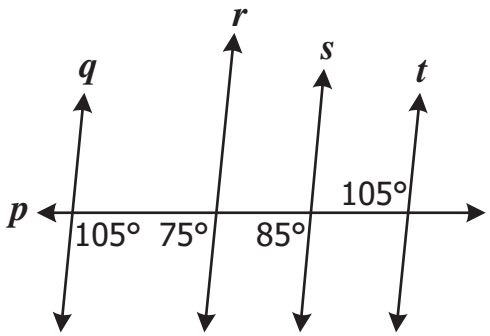


If the measure of $\angle 1$ is 115°, what should be the measure of $\angle 2$?

F 25°
G 65°
H 75°
J 115°

GO ON

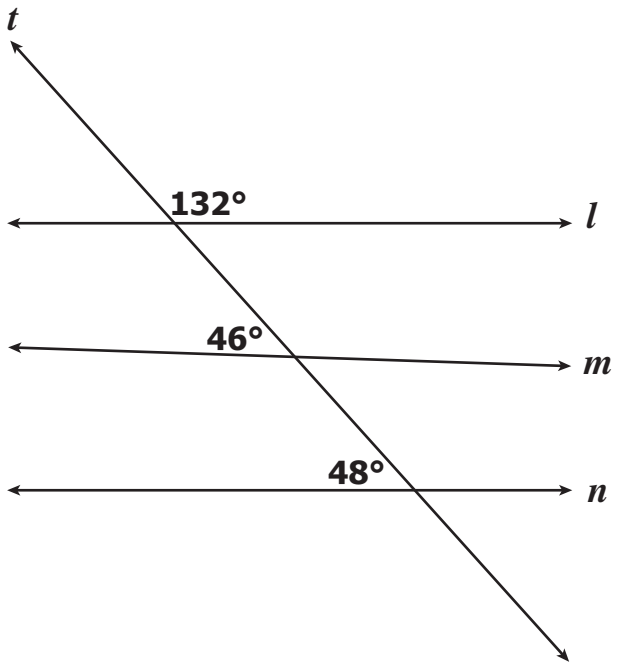
5 Line p is a transversal.



For lines q, r, s, and t, which is *not* parallel to the other three?

A q
B r
C s
D t

6 Lines l, m, and n are intersected by transversal t. The measures of some of the angles that are formed are shown.



Which of the following statements about lines l, m, and n *must* be true?

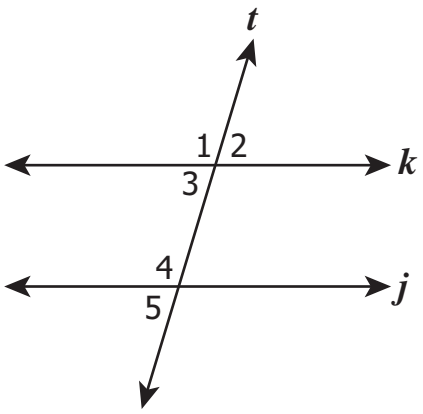
F $l \parallel m \parallel n$

G $l \parallel m$ only

H $l \parallel n$ only

J $m \parallel n$ only

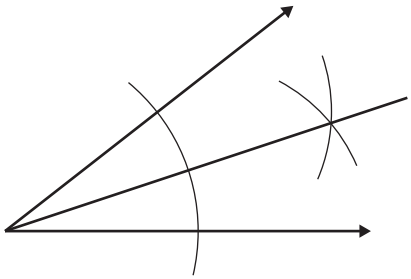
7 Transversal t intersects lines k and j as shown.



Which of the following relationships makes $j \parallel k$?

A $\angle 2 \cong \angle 3$
B $\angle 1 \cong \angle 3$
C $\angle 4$ and $\angle 5$ are supplementary
D $\angle 3$ and $\angle 4$ are supplementary

8

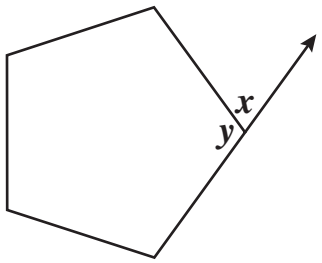


Which of the following constructions is illustrated?

F An angle congruent to a given angle
G The bisector of a given angle
H The bisector of a given segment
J The perpendicular bisector of a given segment

GO ON

9 This is a regular polygon.



What are the values of x and y ?

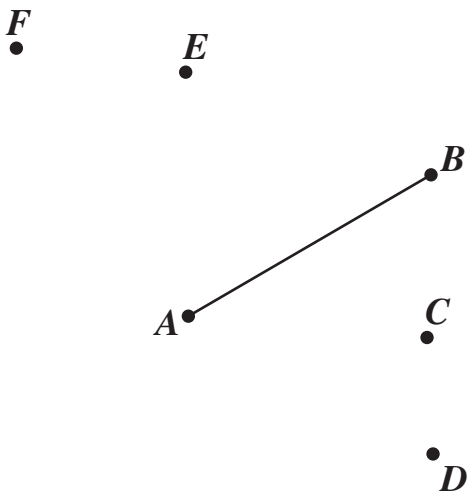
A 78°, 102°

B 72°, 108°

C 60°, 120°

D 45°, 135°

10



Which line segment is apparently congruent to $\overline{AB}$?

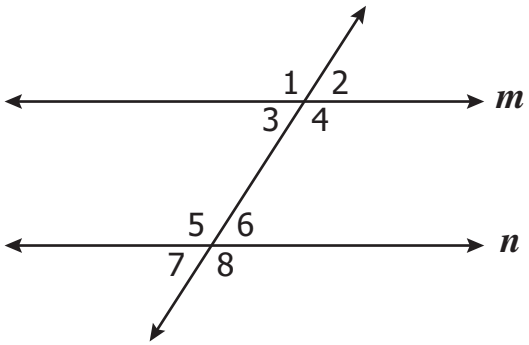
F $\overline{AD}$

G $\overline{AC}$

H $\overline{AE}$

J $\overline{AF}$

11



Which statement would *not* prove line m parallel to line n ?

A $\angle 7 \cong \angle 6$
B $\angle 1 \cong \angle 5$
C $\angle 4 \cong \angle 5$
D $\angle 3 \cong \angle 6$

12 What is the *converse* of the following statement?

If Joe goes fishing, then he needs bait.

F If he needs bait, then Joe goes fishing.
G If Joe does not go fishing, then he does not need bait.
H If he does not need bait, then Joe does not go fishing.
J If Joe goes fishing, then he does not need bait.

13 In which group of statements is the conclusion *not* justified by the previous pair of statements?

A All cooks work in the kitchen.
Mary is a cook.
Mary works in the kitchen.

B All dinosaurs are extinct.
A triceratops is a dinosaur.
All triceratops are extinct.

C All squares are rectangles.
All rectangles are parallelograms.
All squares are parallelograms.

D All fish live in the water.
Some snakes live in the water.
Some snakes are fish.

14 Let p represent

$x^2 = 21$,

and let q represent

x is not a whole number.

Which is a representation of the statement below?

If x is a whole number, then $x^2 \neq 21$.

F $\sim p \rightarrow \sim q$
G $\sim p \rightarrow q$
H $p \rightarrow \sim q$
J $\sim q \rightarrow \sim p$

15 Which pipe lengths could be joined to form a triangle?

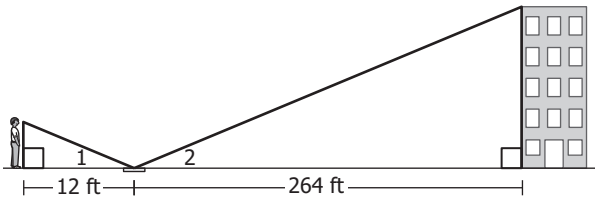
A 15 ft, 6 ft, 5 ft

B 13 ft, 12 ft, 5 ft

C 40 ft, 20 ft, 10 ft

D 19 ft, 16 ft, 2 ft

16 Joseph is standing 12 feet from a mirror lying on the ground, and his eyes are 5 feet above the ground.



The line-of-sight reflection on the mirror makes $\angle 1$ congruent to $\angle 2$. If the building is 264 feet from the mirror, which is closest to the height of the building?

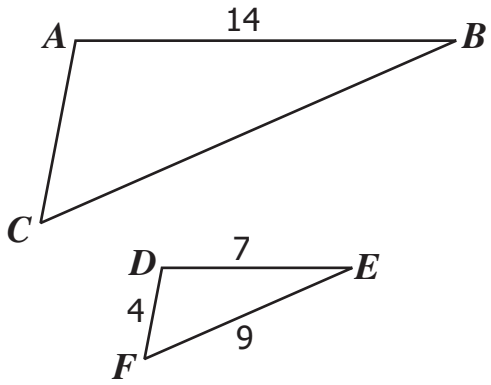
F 100 ft

G 110 ft

H 130 ft

J 145 ft

17



In addition to the information given in the drawing, which statement would be sufficient to prove that $\triangle ABC \sim \triangle DEF$?

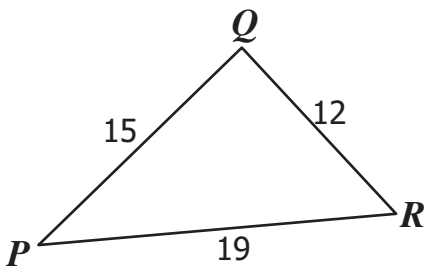
A $\frac{BC}{AC} = \frac{1}{2}$

B $\frac{BC}{AC} = \frac{9}{4}$

C $AC = 18$ and $BC = 8$

D $AC = 8$ and $BC = 18$

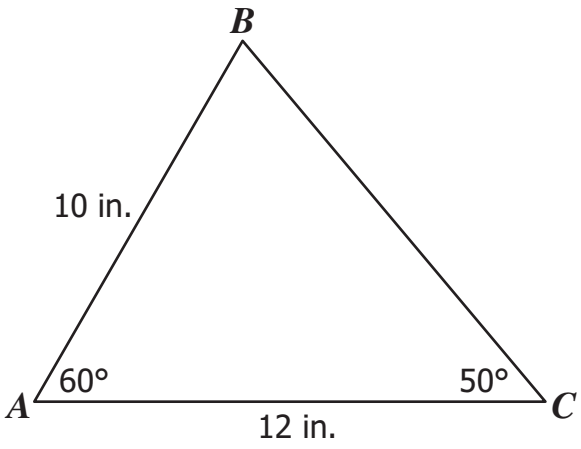
18



Which lists the angles of the triangle in order from least to greatest?

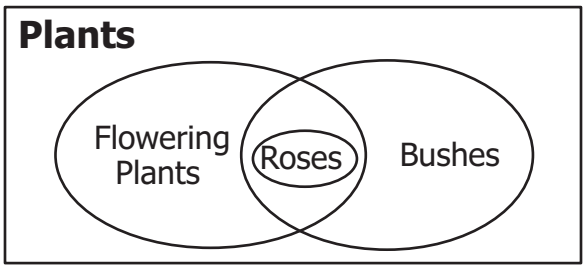
F $\angle R, \angle Q, \angle P$
G $\angle Q, \angle P, \angle R$
H $\angle P, \angle R, \angle Q$
J $\angle P, \angle Q, \angle R$

19 Jennifer made these measurements on $\triangle ABC$. BC must be —



A less than 10 inches
B between 10 and 12 inches
C between 12 and 22 inches
D greater than 22 inches

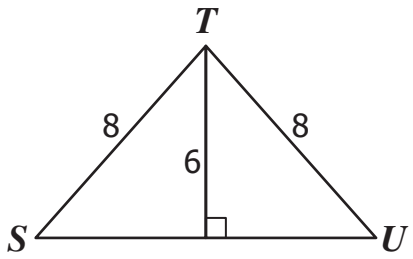
20



According to the diagram, which is true?

F No bushes are flowering plants.
G No roses are bushes.
H Some roses are not flowering plants.
J Some flowering plants are bushes.

21

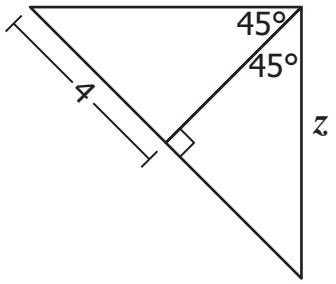


What is the length of $\overline{SU}$?

A $2\sqrt{7}$ cm
B 7 cm
C $4\sqrt{7}$ cm
D 20 cm

GO ON

22



What is the value of z ?

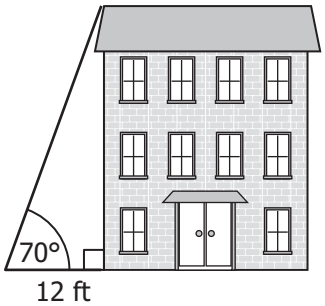
F $2\sqrt{2}$

G $2\sqrt{3}$

H $4\sqrt{2}$

J $8\sqrt{2}$

23 **From a point 12 feet from the base of a building, the angle of elevation from the ground to the top of the building is 70°.**

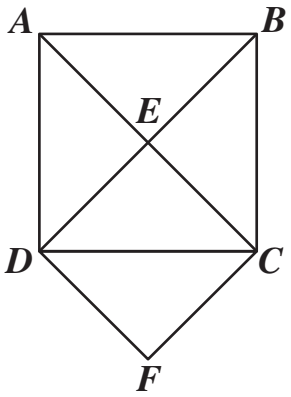


sin 70° ≈ 0.940
cos 70° ≈ 0.342
tan 70° ≈ 2.75

Which is *closest* to the height of the building?

A 24 ft
B 33 ft
C 35 ft
D 41 ft

24



$ABCD$ and $DECF$ are both squares. If $AC = 28$ millimeters, what is the perimeter of $DECF$?

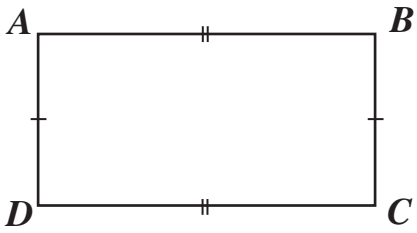
F 14 mm

G 28 mm

H 42 mm

J 56 mm

25 The opposite sides of a window frame are congruent.



Window Frame

Which additional piece of information would verify that the frame is a rectangle?

A $\angle B \cong \angle D$

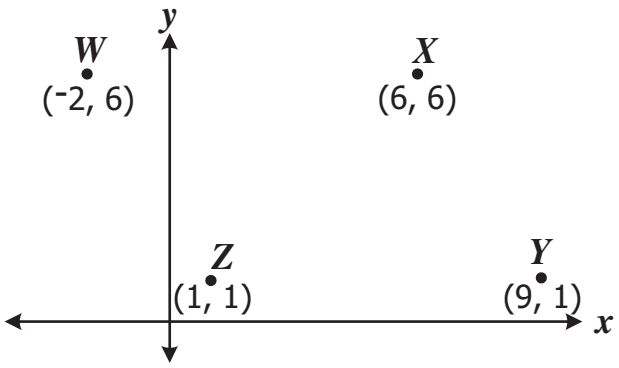
B $\overline{AC} \cong \overline{BD}$

C $\overline{AC} \perp \overline{BD}$

D $m\angle A + m\angle D = 180°$

GO ON

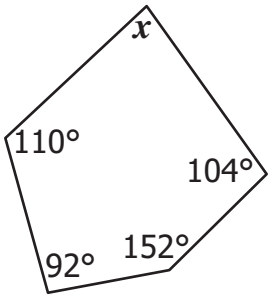
26



In parallelogram $WXYZ$, what are the coordinates of the point of intersection of $\overline{WY}$ and $\overline{ZX}$?

F (2.5, 2.5)
G (7.5, 3.5)
H (5.5, 3.5)
J (3.5, 3.5)

27 The pentagon has the angle measures shown.



What is $m\angle x$?

A 82°
B 92°
C 108°
D 112°

GO ON

28 For a regular polygon with three sides, each interior angle has a measure of —

F 180°

G 60°

H 45°

J 30°

29 Each interior angle of a regular polygon measures 156°. How many sides does the polygon have?

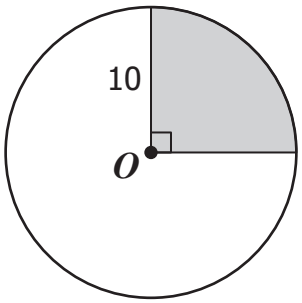
A 13

B 14

C 15

D 16

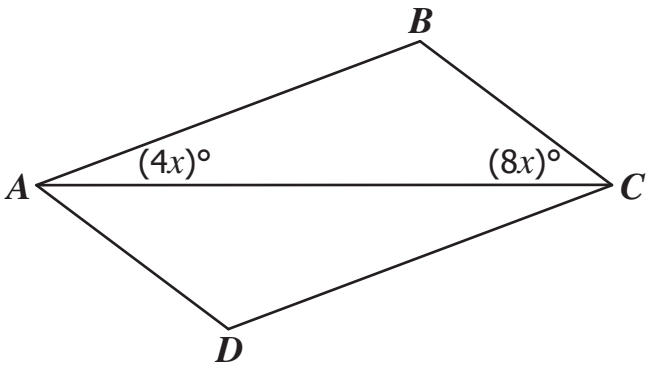
30



The area of the *shaded* sector of circle O is —

F 5π
G 20π
H 25π
J 50π

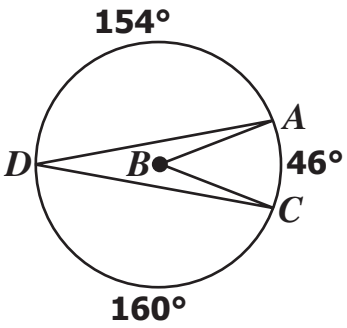
31 **If $ABCD$ is a parallelogram and $x = 5$, what is $m\angle D$?**



A 100°
B 120°
C 140°
D 160°

GO ON

32 **Given:** $\odot B$.

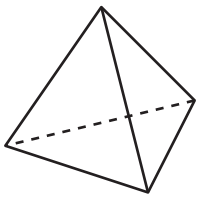


What is the $m\angle ADC$ **?**

F 23°
G 46°
H 77°
J 80°

GO ON

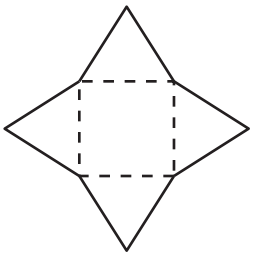
33 The following drawing represents a tetrahedron.



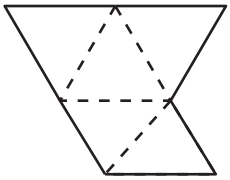
Tetrahedron
4 Faces

Which of the following nets could be folded on the dashed lines to form a tetrahedron?

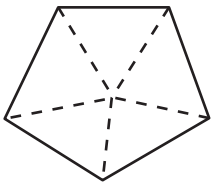
A



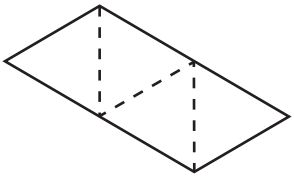
B



C

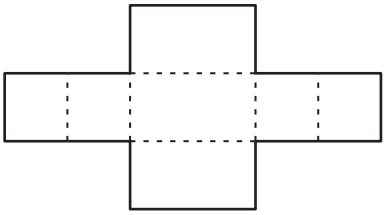


D

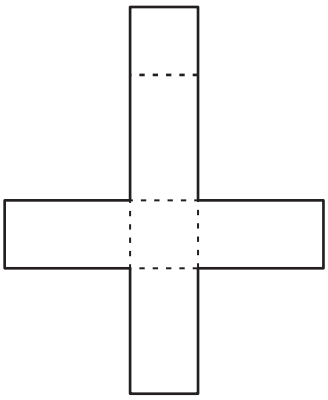


34 When folded on the dotted lines, which net will *not* form a rectangular prism?

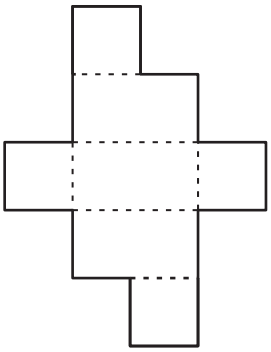
F



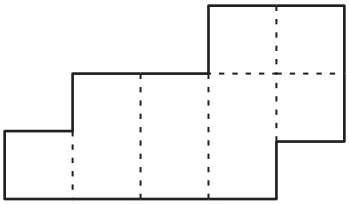
G



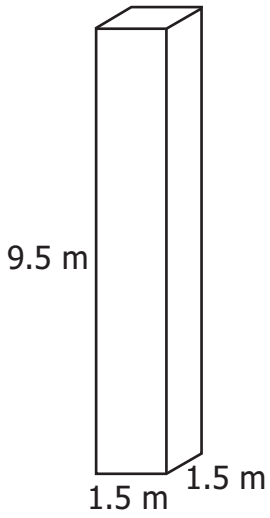
H



J



35 A concrete pillar shaped as a rectangular prism is designed as follows.



Which is closest to the volume of concrete needed to fill the pillar?

A 12.5 m^3
B 14.3 m^3
C 21.4 m^3
D 28.5 m^3

36 A right triangular pyramid has a height of 10 inches and a base area of 41.57 square inches. What is the volume, in cubic inches, of the pyramid?

F 138.56
G 207.85
H 277.13
J 415.69

37 The surface area of a plastic ball is 196π. A sponge ball has a radius twice that of the plastic ball. What is the surface area of the sponge ball?

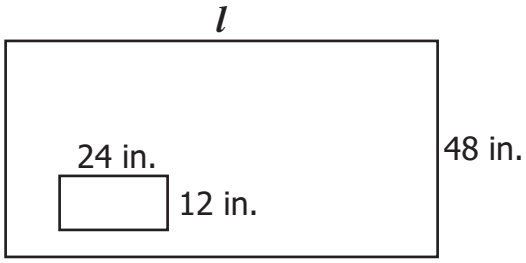
A $9{,}604\pi$

B 993π

C 784π

D 546π

38 A rectangular place mat is similar to the table upon which it is placed.



According to the diagram, which proportion can be used to determine the length of the table, l ?

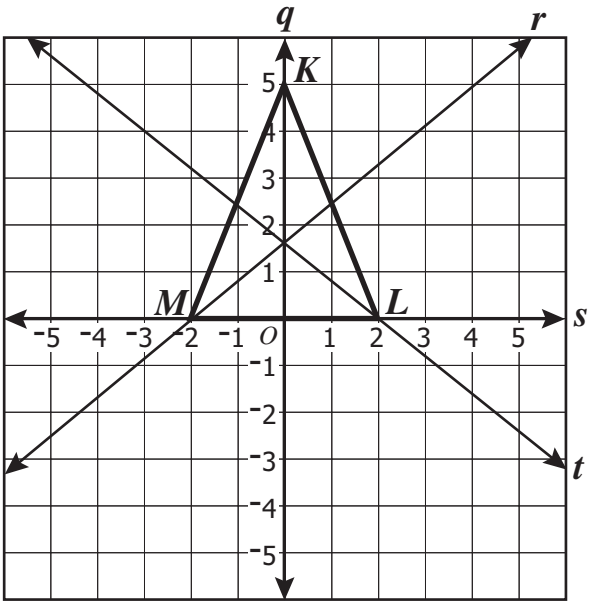
F $\frac{12}{48} = \frac{24}{l}$

G $\frac{12}{24} = \frac{l}{48}$

H $\frac{12}{l} = \frac{24}{48}$

J $12l = 48$

39



Which is most likely a line of symmetry for triangle KLM ?

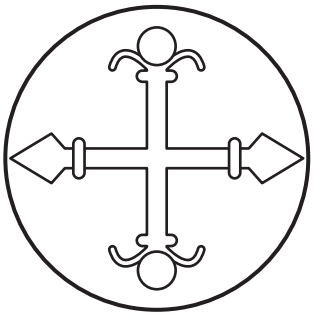
A q
B r
C s
D t

40 The diameter of a circle has endpoints $(^{-}3, 2)$ and $(3, ^{-}2)$. Which is closest to the length of the diameter of the circle?

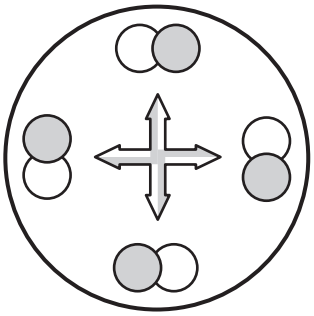
F 1.4
G 3.2
H 7.2
J 10.0

41 Janelle is looking at plate designs. Which design has exactly 4 lines of symmetry?

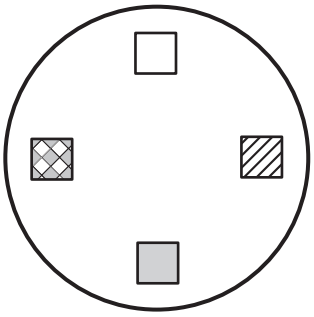
A



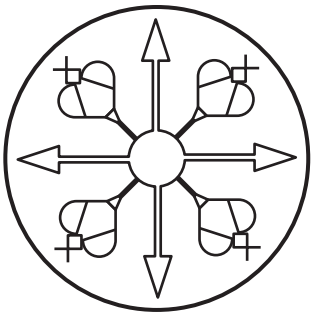
B



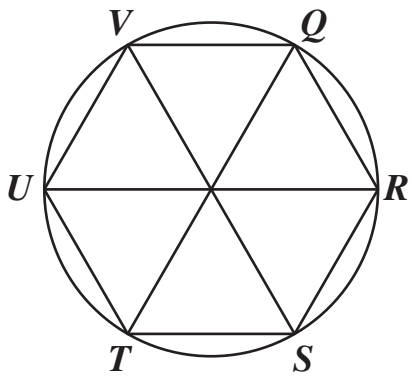
C



D



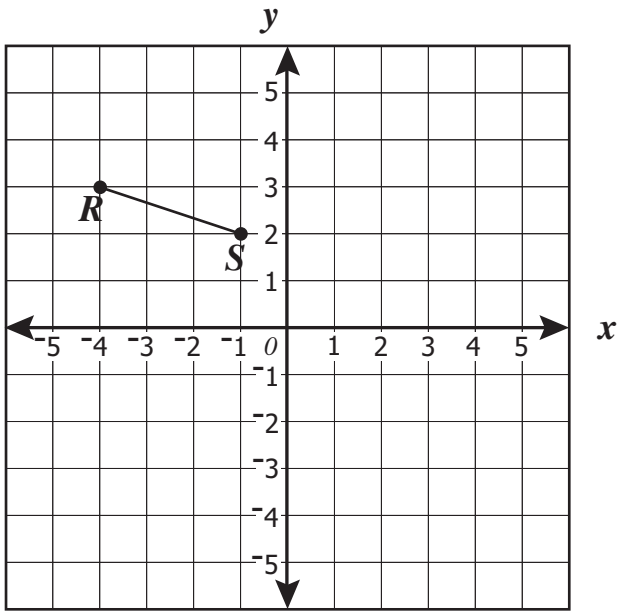
42 In the design, a hexagon is inscribed in a circle.



Which point shows the location of Point Q after a 240° clockwise rotation around the center?

F S
G T
H U
J V

43



What are the *most* likely coordinates of R' if $\overline{R'S'}$ is a reflection of $\overline{RS}$ across the y-axis?

A (4, 3)

B ($^{-}$4, $^{-}$3)

C (4, $^{-}$3)

D (3, 4)

44 A line segment has an endpoint at (3, 2). If the midpoint of the line segment is (6, $^{-}$2), what are the coordinates of the point at the other end of the line segment?

F (4.5, 0)

G (0, 6)

H (9, 4)

J (9, $^{-}$6)

STOP