VIRGINIA STANDARDS OF LEARNING

Spring 2008 Released Test

END OF COURSE GEOMETRY

Form M0118, CORE 1

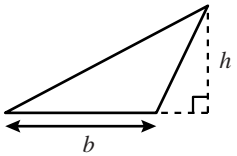
This released test contains 1 fewer test item (#1– 44 only)
than an original SOL EOC Geometry test.

Property of the Virginia Department of Education

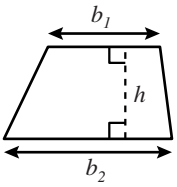
©2008 by the Commonwealth of Virginia, Department of Education, P.O. Box 2120, Richmond, Virginia 23218-2120. All rights reserved. Except as permitted by law, this material may not be reproduced or used in any form or by any means, electronic or mechanical, including photocopying or recording, or by any information storage or retrieval system, without written permission from the copyright owner. Commonwealth of Virginia public school educators may reproduce any portion of these released tests for non-commercial educational purposes without requesting permission. All others should direct their written requests to the Virginia Department of Education, Division of Student Assessment and School Improvement, at the above address or by e-mail to Student_Assessment@doe.virginia.gov.

Geometry Formula Sheet

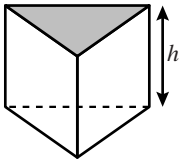
Geometric Formulas



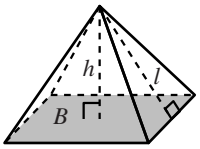
$A = \frac{1}{2}bh$



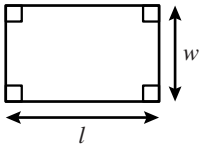
$A = \frac{1}{2}h(b_1 + b_2)$



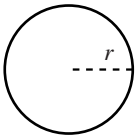
$V = Bh$
$L.A. = hp$
$S.A. = L.A. + 2B$



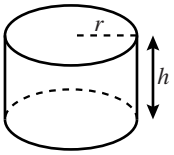
$V = \frac{1}{3}Bh$
$L.A. = \frac{1}{2}lp$
$S.A. = L.A. + B$



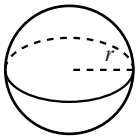
$A = lw$
$p = 2(l + w)$



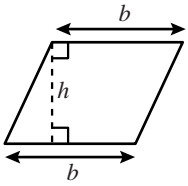
$A = \pi r^2$
$C = 2\pi r$



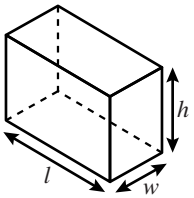
$V = \pi r^2 h$
$L.A. = 2\pi rh$
$S.A. = 2\pi r(h + r)$



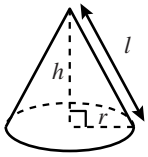
$V = \frac{4}{3}\pi r^3$
$S.A. = 4\pi r^2$



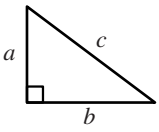
$A = bh$



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



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



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

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

$\pi \approx 3.14$

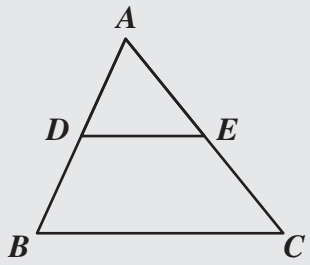
$\pi \approx \frac{22}{7}$

Copyright © 2006 by the Commonwealth of Virginia Department of Education

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

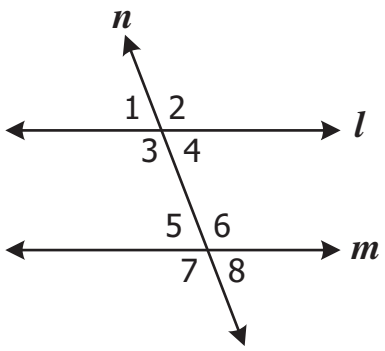


If $\triangle ABC$ is similar to $\triangle ADE$, then $AB : AD = ? : AE$. Which replaces the "?" to make the statement true?

A AC
B AE
C DE
D BC

GO ON

1 Lines l and m are cut by transversal n.



Which statement would prove $l \parallel m$?

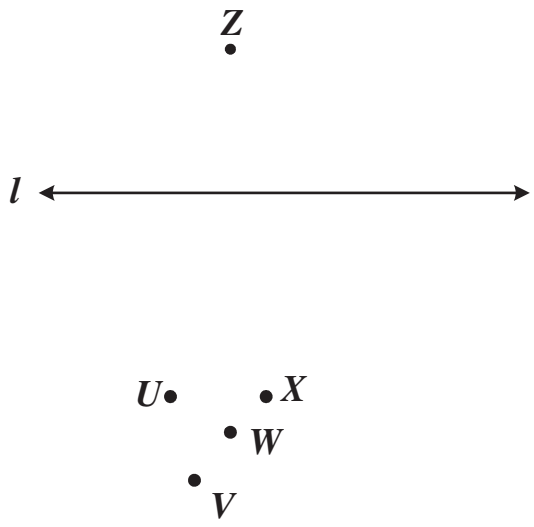
A $m\angle 2 = m\angle 6$

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

C $m\angle 7 + m\angle 8 = 180°$

D $m\angle 3 + m\angle 5 = 90°$

2

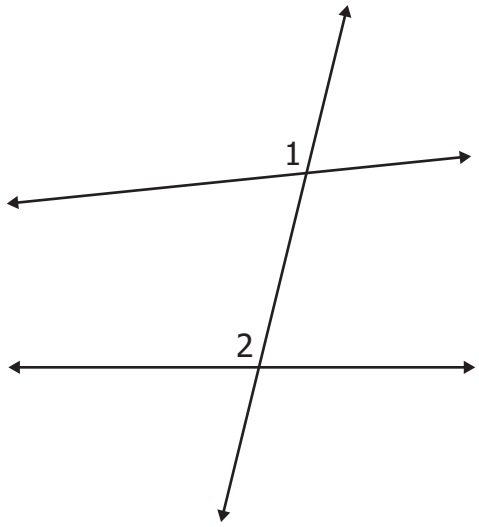


Which point is on the line $\perp$ to l and passing through Z ?

F U
G V
H W
J X

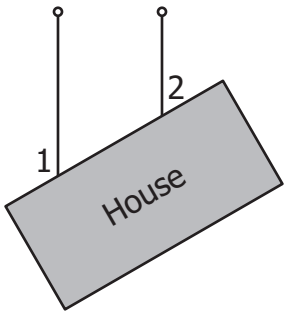
GO ON

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.

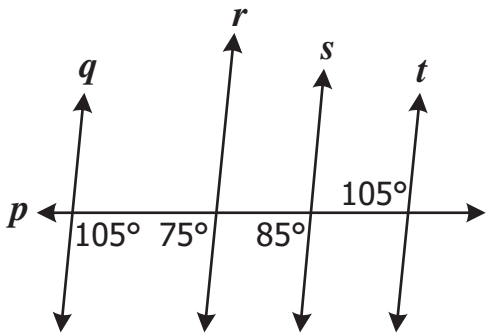


If the measure of $\angle 1$ is 115°, what should be the measure of $\angle 2$?

F 25°
G 65°
H 75°
J 115°

GO ON

5 Line p is a transversal.

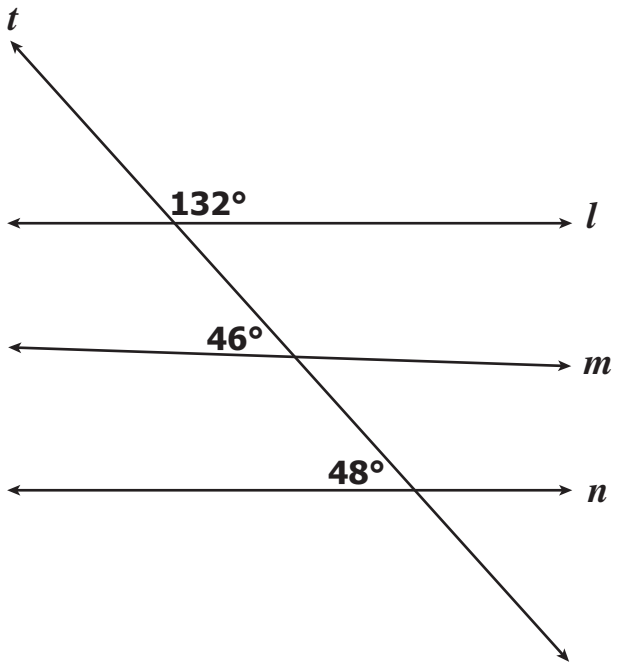


For lines q, r, s, and t, which is *not* parallel to the other three?

A q
B r
C s
D t

GO ON

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?

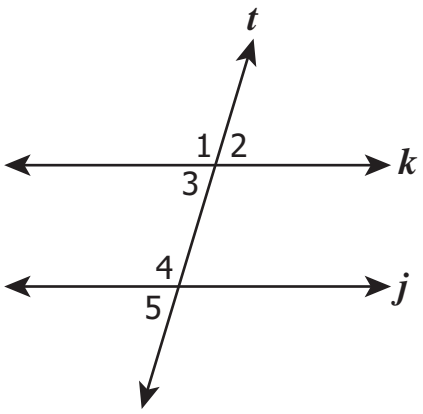
F $l \parallel m \parallel n$

G $l \parallel m$ only

H $l \parallel n$ only

J $m \parallel n$ only

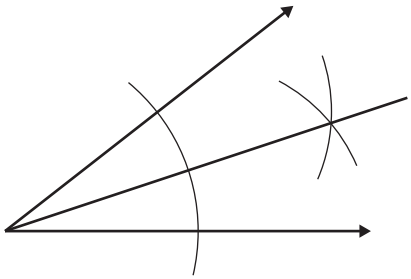
7 Transversal t intersects lines k and j as shown.



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

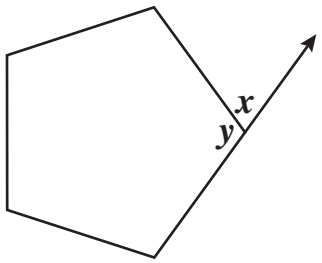


Which of the following constructions is illustrated?

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 ?

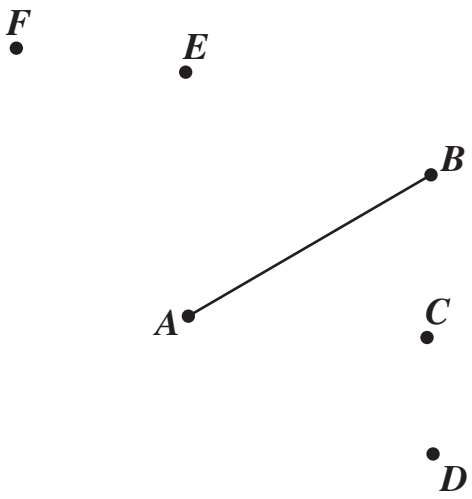
A 78°, 102°

B 72°, 108°

C 60°, 120°

D 45°, 135°

10



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

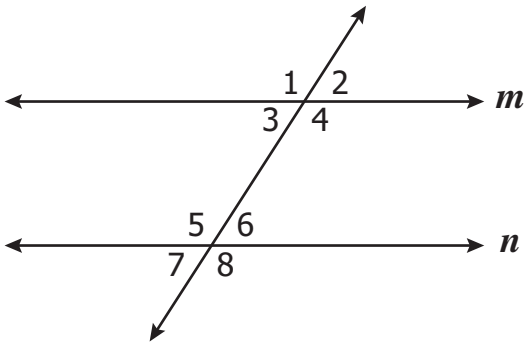
F $\overline{AD}$

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?

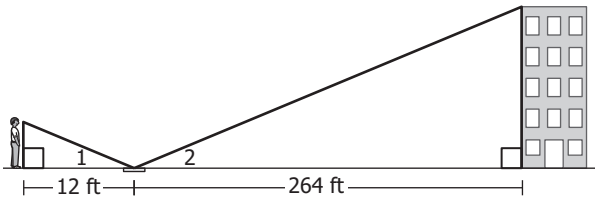
A 15 ft, 6 ft, 5 ft

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?

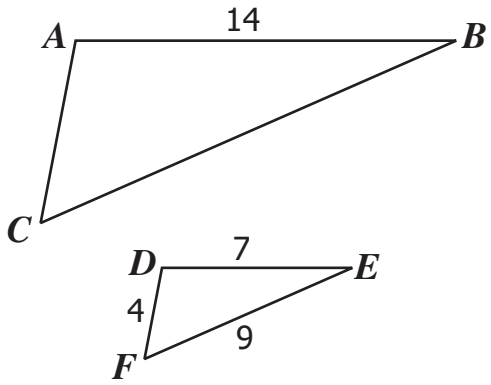
F 100 ft

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 $\triangle ABC \sim \triangle DEF$?

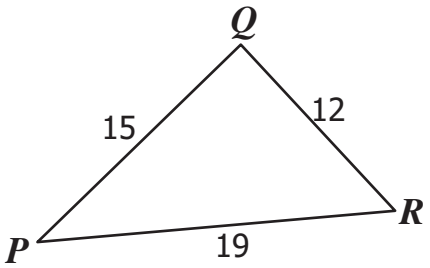
A $\frac{BC}{AC} = \frac{1}{2}$

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

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

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

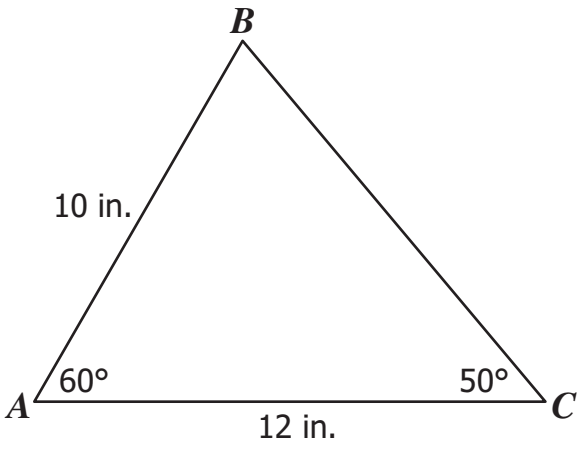
18



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

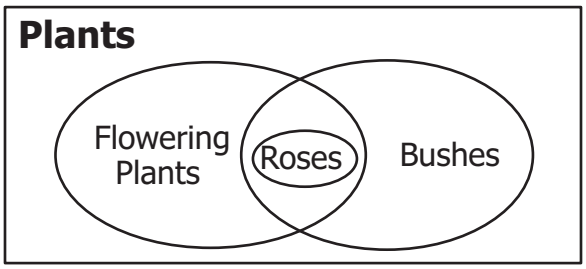
F $\angle R, \angle Q, \angle P$
G $\angle Q, \angle P, \angle R$
H $\angle P, \angle R, \angle Q$
J $\angle P, \angle Q, \angle R$

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

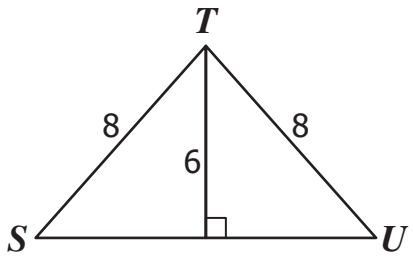
20



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

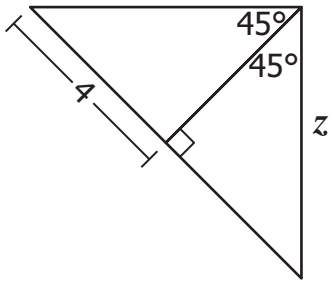


What is the length of $\overline{SU}$?

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 ?

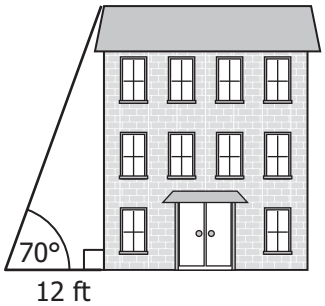
F $2\sqrt{2}$

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°.**

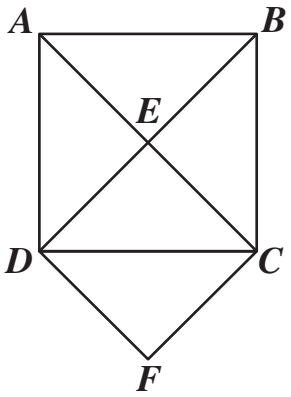


sin 70° ≈ 0.940
cos 70° ≈ 0.342
tan 70° ≈ 2.75

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 $\angle B \cong \angle D$

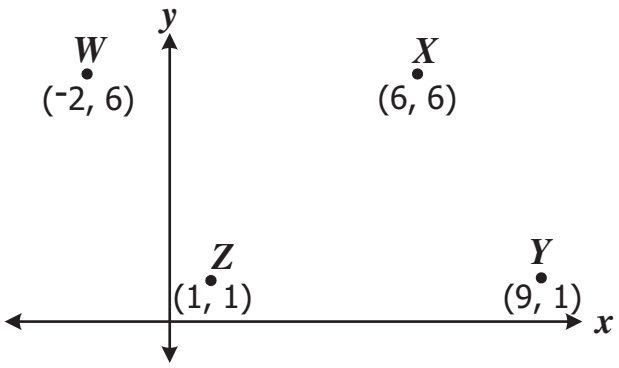
B $\overline{AC} \cong \overline{BD}$

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

D $m\angle A + m\angle D = 180°$

GO ON

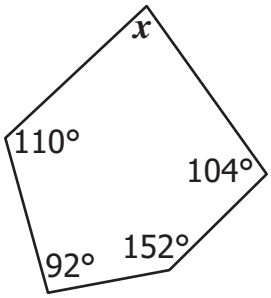
26



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?

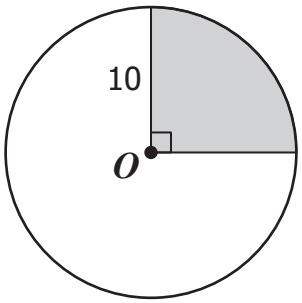
A 13

B 14

C 15

D 16

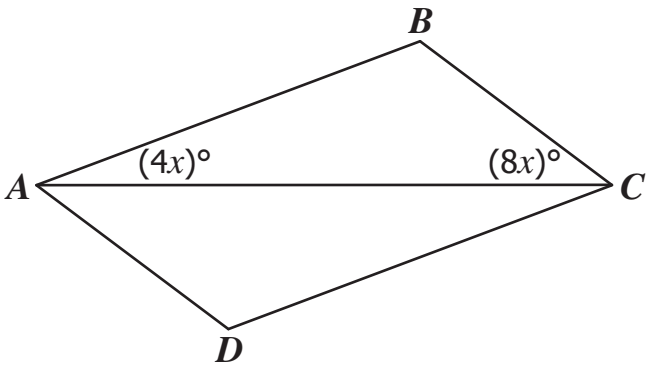
30



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

F 5π
G 20π
H 25π
J 50π

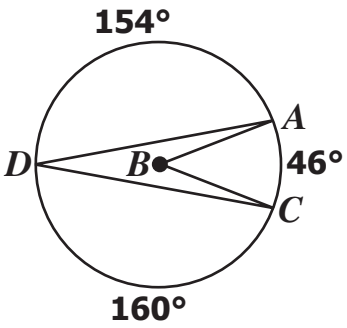
31 **If $ABCD$ is a parallelogram and $x = 5$, what is $m\angle D$?**



A 100°
B 120°
C 140°
D 160°

GO ON

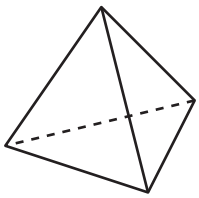
32 **Given:** $\odot B$.



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

F 23°
G 46°
H 77°
J 80°

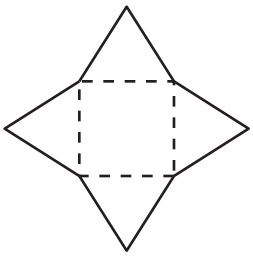
33 The following drawing represents a tetrahedron.



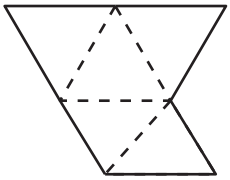
Tetrahedron
4 Faces

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

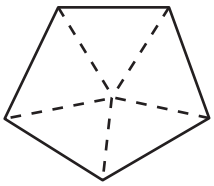
A



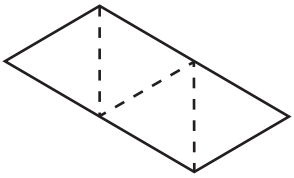
B



C

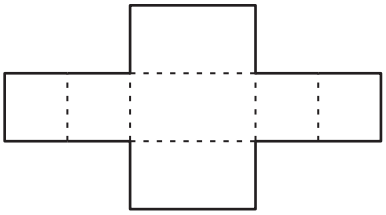


D

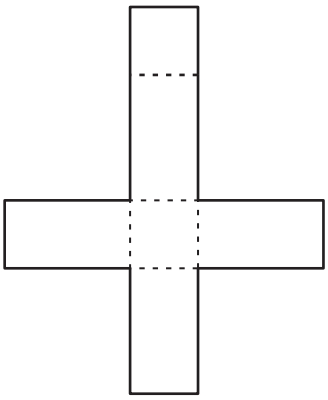


34 When folded on the dotted lines, which net will *not* form a rectangular prism?

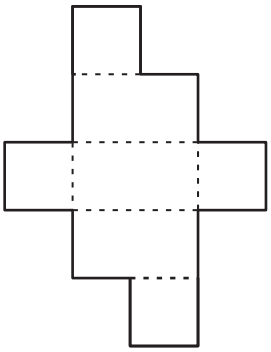
F



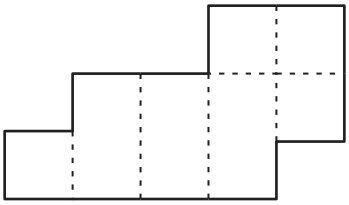
G



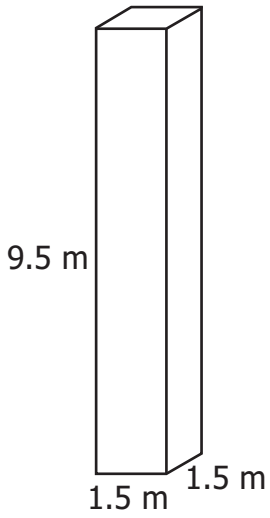
H



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?

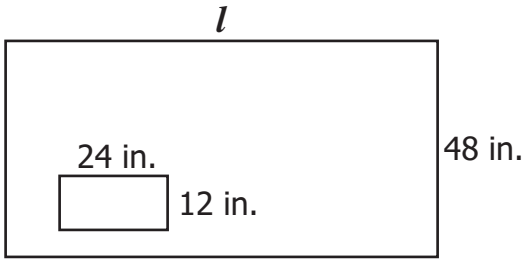
A $9{,}604\pi$

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 ?

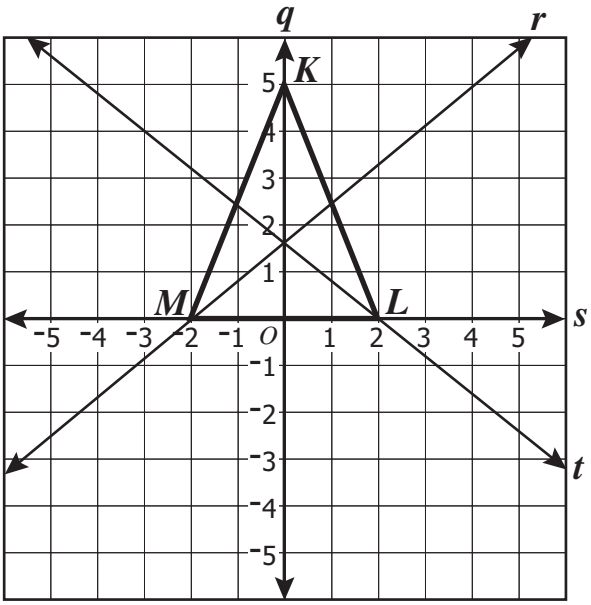
F $\frac{12}{48} = \frac{24}{l}$

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

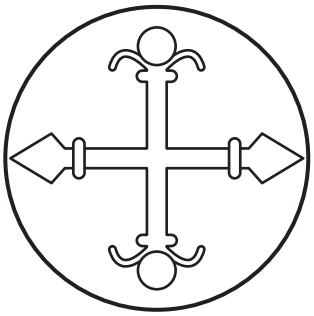
40 The diameter of a circle has endpoints $(^{-}3, 2)$ and $(3, ^{-}2)$. Which is closest to the length of the diameter of the circle?

F 1.4
G 3.2
H 7.2
J 10.0

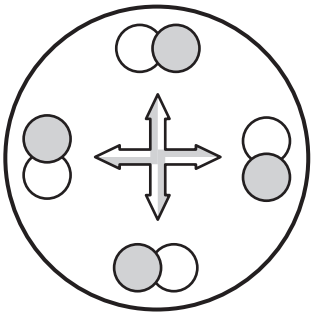
GO ON

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

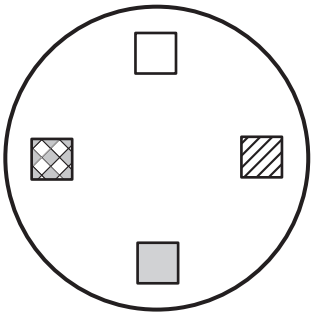
A



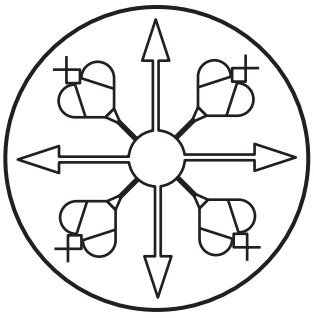
B



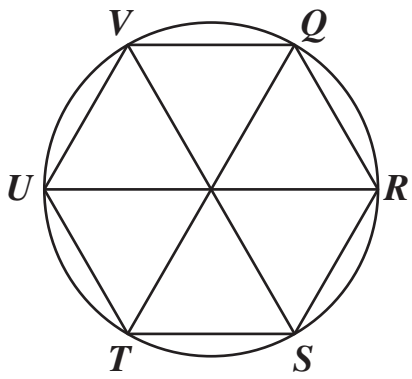
C



D



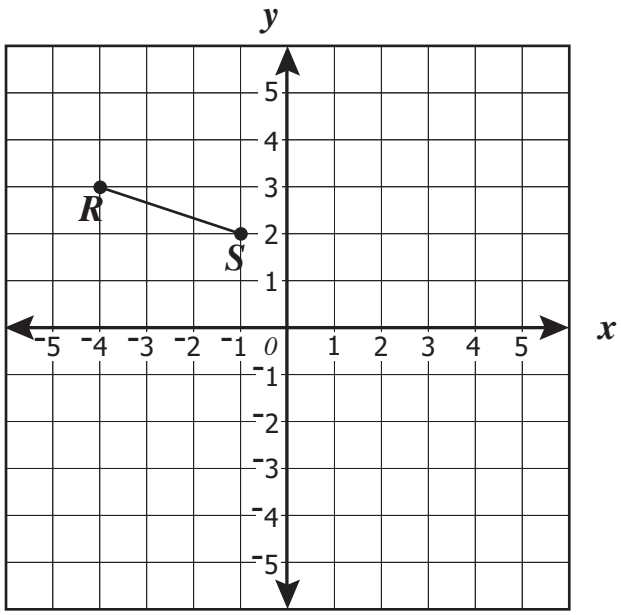
42 In the design, a hexagon is inscribed in a circle.



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

Answer Key-EOC021-M0118

Test Sequence Number	Correct Answer	Reporting Category	Reporting Category Description
1	A	001	Lines and Angles
2	H	001	Lines and Angles
3	B	001	Lines and Angles
4	G	001	Lines and Angles
5	C	001	Lines and Angles
6	H	001	Lines and Angles
7	D	001	Lines and Angles
8	G	001	Lines and Angles
9	B	001	Lines and Angles
10	F	001	Lines and Angles
11	A	001	Lines and Angles
12	F	002	Triangles and Logic
13	D	002	Triangles and Logic
14	J	002	Triangles and Logic
15	B	002	Triangles and Logic
16	G	002	Triangles and Logic
17	D	002	Triangles and Logic
18	H	002	Triangles and Logic
19	B	002	Triangles and Logic
20	J	002	Triangles and Logic
21	C	002	Triangles and Logic
22	H	002	Triangles and Logic
23	B	002	Triangles and Logic
24	J	003	Polygons and Circles
25	B	003	Polygons and Circles
26	J	003	Polygons and Circles
27	A	003	Polygons and Circles
28	G	003	Polygons and Circles
29	C	003	Polygons and Circles
30	H	003	Polygons and Circles
31	B	003	Polygons and Circles
32	F	003	Polygons and Circles
33	D	004	Three-Dimensional Figures
34	J	004	Three-Dimensional Figures
35	C	004	Three-Dimensional Figures
36	F	004	Three-Dimensional Figures
37	C	004	Three-Dimensional Figures
38	F	004	Three-Dimensional Figures
39	A	005	Coordinate Relations and Transformations
40	H	005	Coordinate Relations and Transformations
41	D	005	Coordinate Relations and Transformations
42	H	005	Coordinate Relations and Transformations
43	A	005	Coordinate Relations and Transformations
44	J	005	Coordinate Relations and Transformations

Geometry, Core 1

If you get this many items correct:		Then your converted scale score is:
0		000
1		176
2		211
3		233
4		248
5		261
6		272
7		281
8		289
9		297
10		304
11		311
12		317
13		323
14		329
15		335
16		340
17		345
18		350
19		355
20		360
21		365
22		370
23		375
24		380
25		385
26		390
27		395
28		**400**
29		406
30		411
31		417
32		422
33		428
34		435
35		441
36		448
37		456
38		465
39		474
40		485
41		497
42		**513**
43		534
44		570
45		600