VIRGINIA STANDARDS OF LEARNING

Spring 2009 Released Test

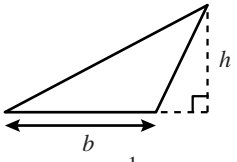
END OF COURSE GEOMETRY

Form M0119, CORE 1

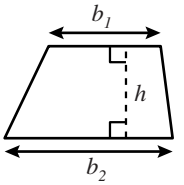
This released test contains 1 fewer test item (#1-44 only)
than an original SOL EOC Geometry test.

Geometry Formula Sheet

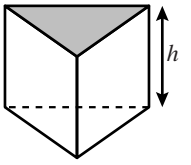
Geometric Formulas



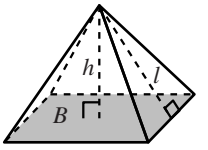
$A = \frac{1}{2}bh$



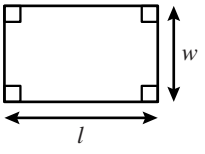
$A = \frac{1}{2}h(b_1 + b_2)$



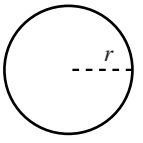
$V = Bh$
$L.A. = hp$
$S.A. = L.A. + 2B$



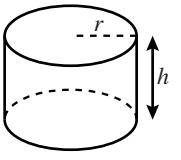
$V = \frac{1}{3}Bh$
$L.A. = \frac{1}{2}lp$
$S.A. = L.A. + B$



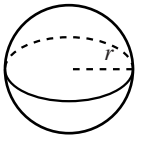
$A = lw$
$p = 2(l + w)$



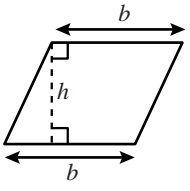
$A = \pi r^2$
$C = 2\pi r$



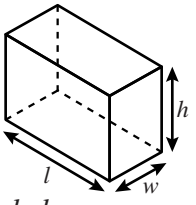
$V = \pi r^2 h$
$L.A. = 2\pi rh$
$S.A. = 2\pi r(h + r)$



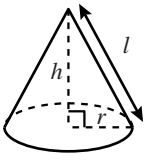
$V = \frac{4}{3}\pi r^3$
$S.A. = 4\pi r^2$



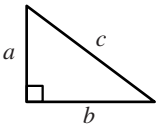
$A = bh$



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



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



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

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

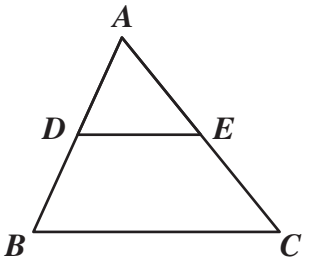
$\pi \approx 3.14$

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

Directions

Read each question and choose the best answer.

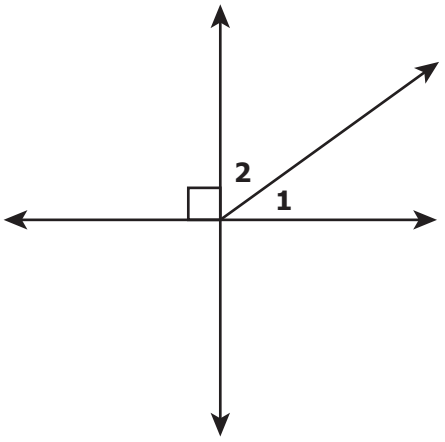
SAMPLE



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 In the figure shown, $m\angle 1 = (4x + 12)°$ and $m\angle 2 = (6x + 8)°$.

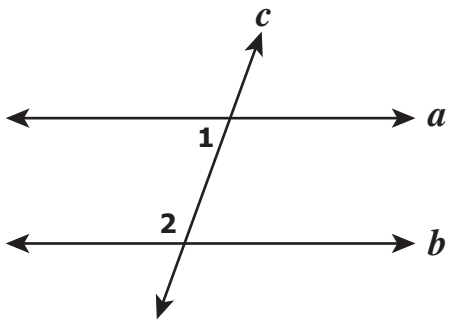


What is $m\angle 1$?

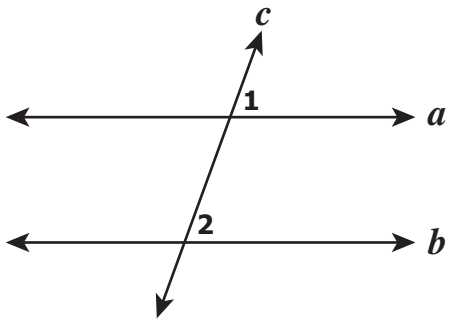
A 20°
B 40°
C 50°
D 76°

2 In each of the following figures, transversal c cuts lines a and b. In which figure are $\angle 1$ and $\angle 2$ corresponding angles?

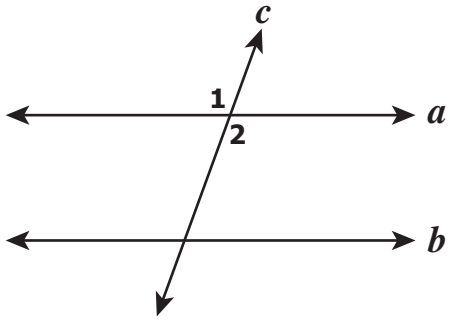
F



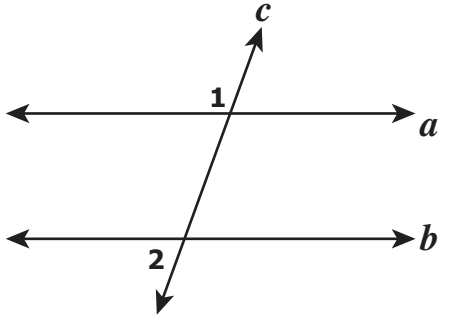
G



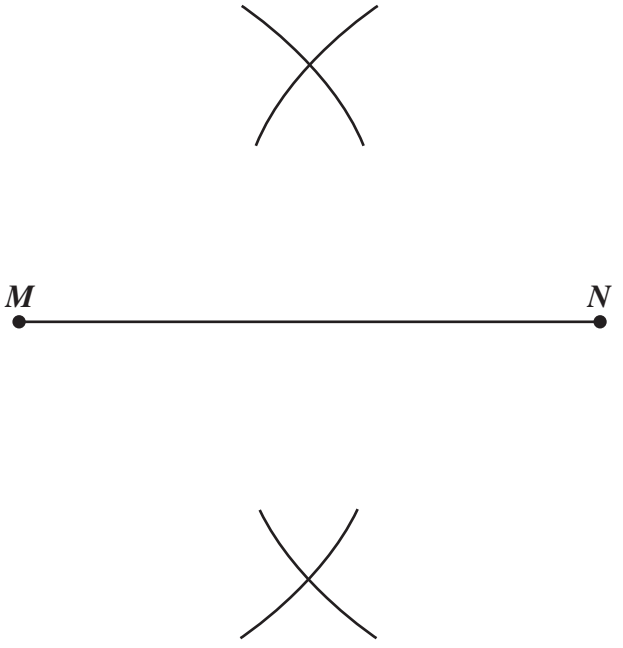
H



J



3 The arcs for a compass and straightedge construction are shown below.



Which construction is apparently being made?

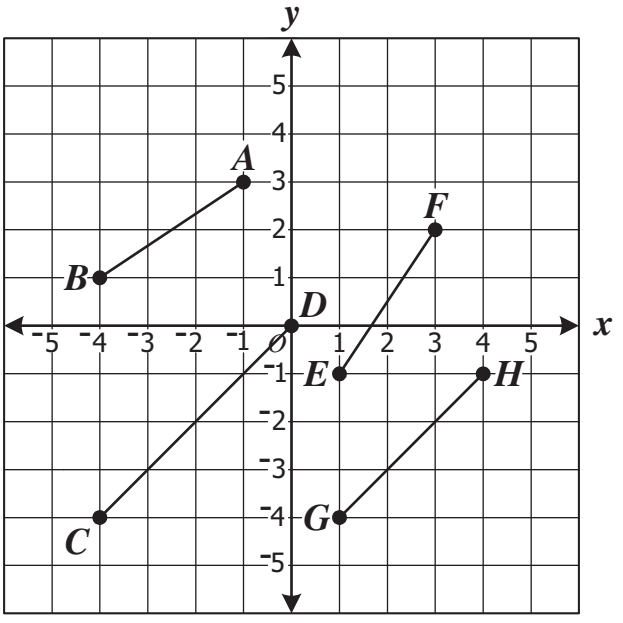
A Two lines parallel to $\overleftrightarrow{MN}$

B Two congruent angles

C A segment congruent to $\overline{MN}$

D The perpendicular bisector of $\overline{MN}$

4



Which two segments in the drawing above are most likely parallel?

F $\overline{CD}$ and $\overline{GH}$

G $\overline{CD}$ and $\overline{AB}$

H $\overline{AB}$ and $\overline{EF}$

J $\overline{EF}$ and $\overline{GH}$

5

Which segment has a measure equal to $\frac{1}{2}(PQ)$?

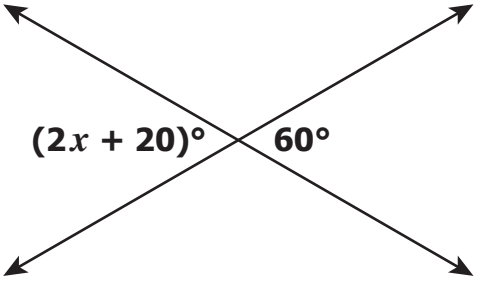
A

B

C 

D

6 Two lines intersect as shown.

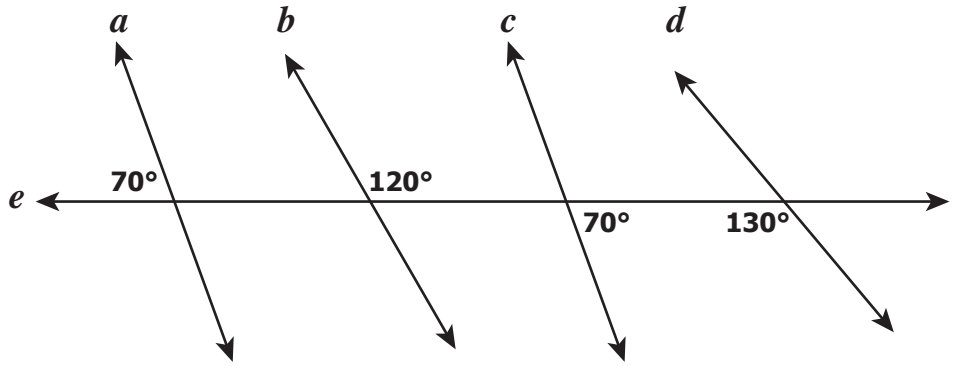


What is the value of x ?

F 20
G 40
H 50
J 60

GO ON

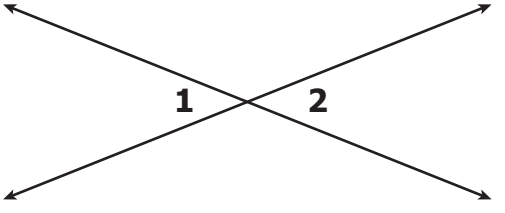
7 In this figure, transversal e intersects lines a, b, c, and d.



Which lines *must* be parallel?

A a and c
B b and c
C b and d
D a and d

8 In the diagram, $m\angle 1 = (6x + 12)°$ and $m\angle 2 = (9x - 4)°$.

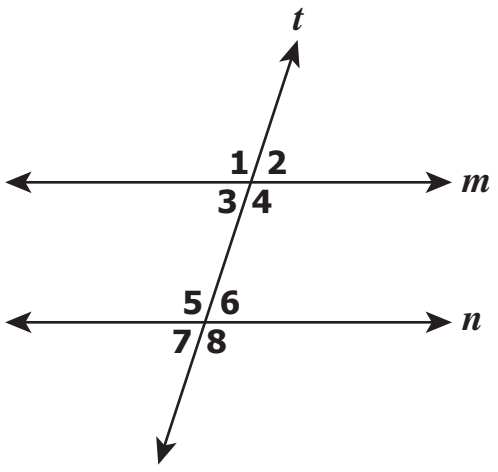


Which is closest to the value of x ?

F 5.3
G 5.5
H 11.5
J 12.5

GO ON

9 In this figure, line t is a transversal of lines m and n.



Which of the following statements determines that lines m and n are parallel?

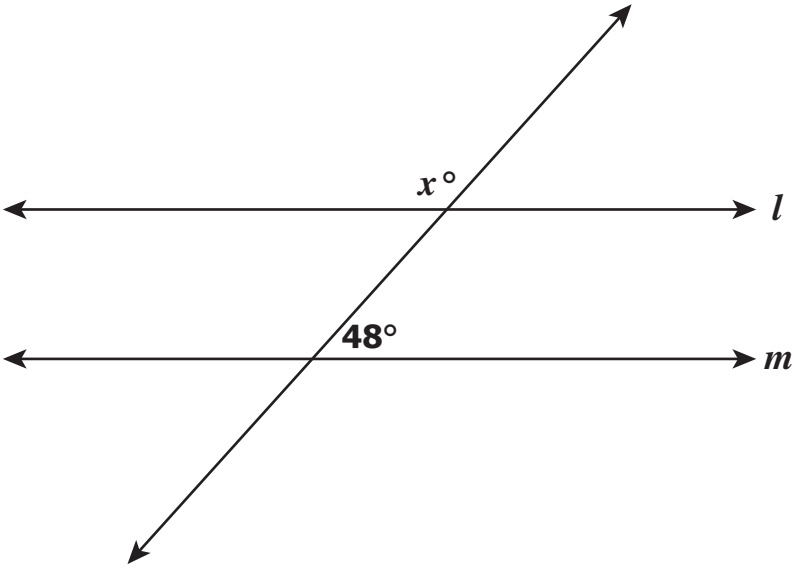
A $\angle 1 \cong \angle 4$

B $\angle 2 \cong \angle 7$

C $\angle 3$ and $\angle 5$ are complementary

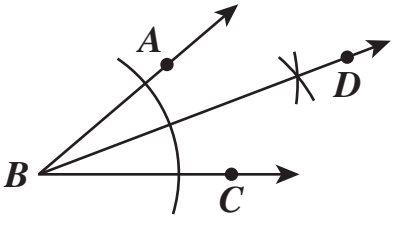
D $\angle 6$ and $\angle 8$ are supplementary

10 For what value of x is line l parallel to line m in this figure?



F 42
G 48
H 132
J 138

11 Amber constructed $\overrightarrow{BD}$ as shown.

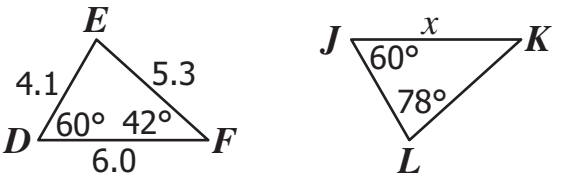


Which of the following statements *must* be true?

A $BA = BC$
B $BD = 2BA$
C $m\angle ABD = m\angle CBD$
D $m\angle CBD = 2m\angle ABC$

GO ON

12



What value of x makes $\triangle DEF \cong \triangle JLK$?

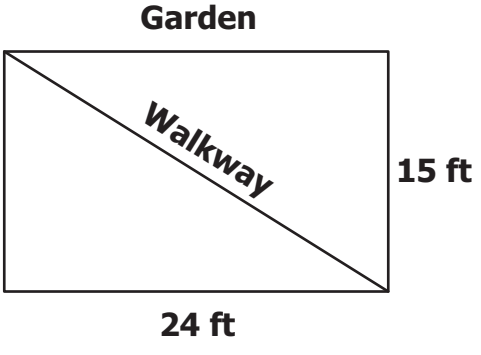
F $x = 9.4$

G $x = 6.0$

H $x = 5.3$

J $x = 4.1$

13 **Mr. Ammons is constructing a walkway through his rectangular garden. The walkway runs diagonally as shown in the diagram.**



Which is closest to the length of the walkway?

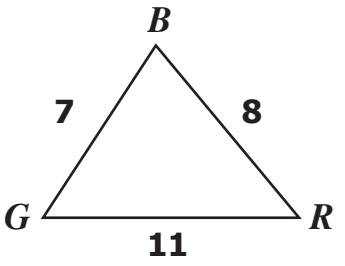
A 18.7 ft

B 28.3 ft

C 30.0 ft

D 39.0 ft

14 In the triangle shown, $GR = 11$, $BR = 8$, and $BG = 7$.



Which statement is true about the angles in $\triangle RGB$?

F $m\angle R$ is the greatest
G $m\angle G$ is the greatest
H $m\angle R$ is the least
J $m\angle G$ is the least

15 Consider the following statement.

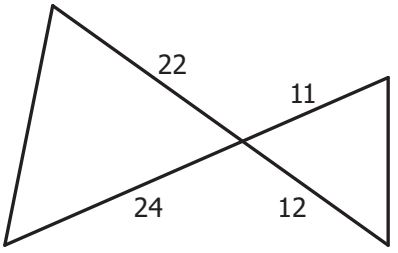
If $4x = 8$, then $x = 2$.

Which is the inverse of the statement?

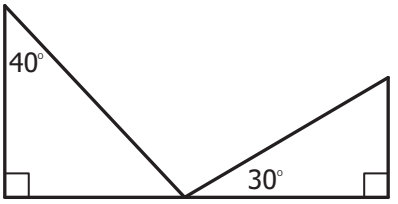
A If $x = 2$, then $4x = 8$.
B If $x \neq 2$, then $4x \neq 8$.
C If $x = 2$, then $4x \neq 8$.
D If $4x \neq 8$, then $x \neq 2$.

16 Which drawing contains a pair of similar triangles?

F



G



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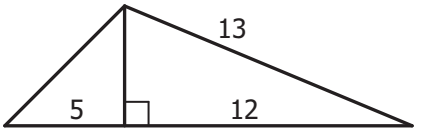
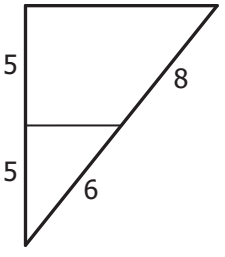
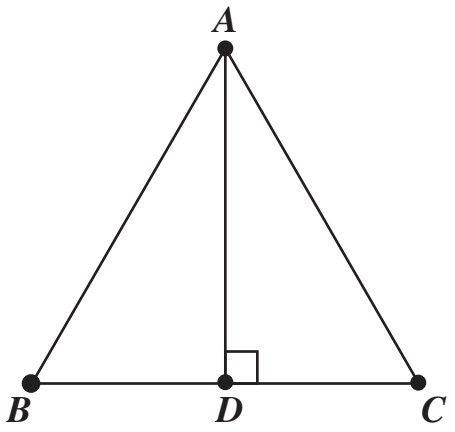


J



GO ON

17 Triangle ABC is an equilateral triangle with side lengths of 10 inches.



What is the length, in inches, of $\overline{AD}$?

A 5

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

C $5\sqrt{2}$

D $5\sqrt{3}$

18 John wants to make a triangular garden. Which of the following are possible dimensions?

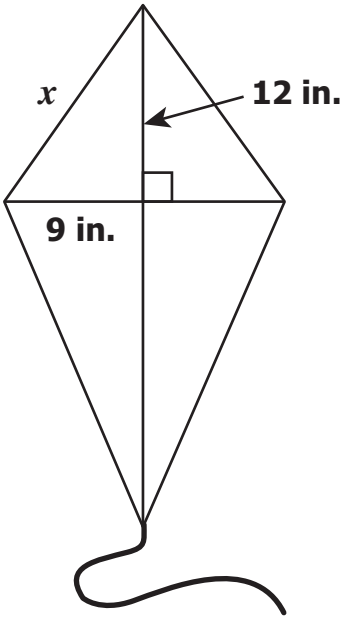
F 4 ft by 5 ft by 10 ft

G 6 ft by 6 ft by 12 ft

H 6 ft by 8 ft by 10 ft

J 8 ft by 12 ft by 20 ft

19 A drawing of Mark's kite is shown below.



What is the length of the short section of the outer frame indicated by x in the drawing?

A 16 in.

B 15 in.

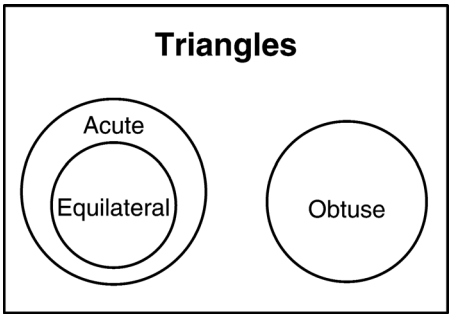
C 14 in.

D 13 in.

20 Which Venn diagram represents all the following set of statements?

- **Some triangles are acute.**
- **Some triangles are obtuse.**
- **No triangle is both acute and obtuse.**
- **Some acute triangles are equilateral.**

F



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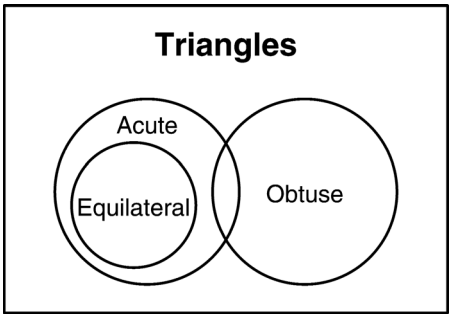

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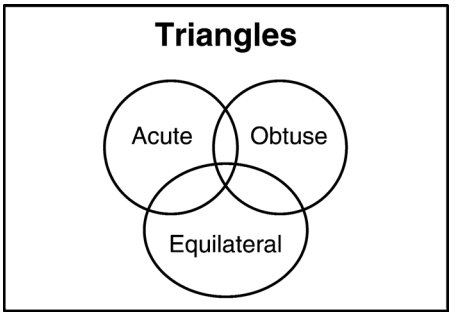
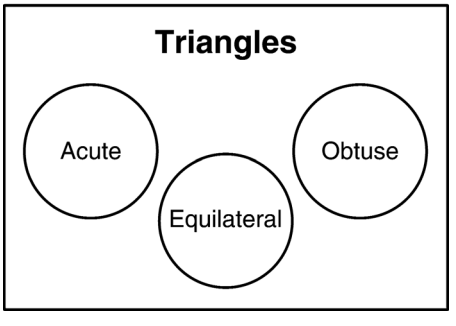
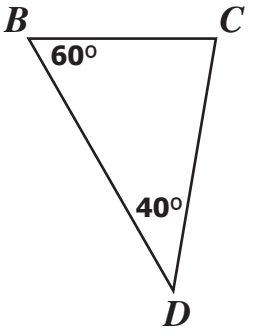


J



21



Which lists the sides of $\triangle BCD$ in order from shortest to longest?

A $\overline{CD}, \overline{BD}, \overline{BC}$

B $\overline{BC}, \overline{CD}, \overline{BD}$

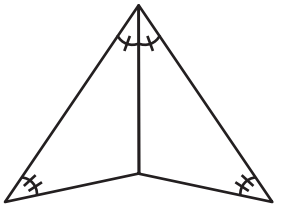
C $\overline{BD}, \overline{CD}, \overline{BC}$

D $\overline{BC}, \overline{BD}, \overline{CD}$

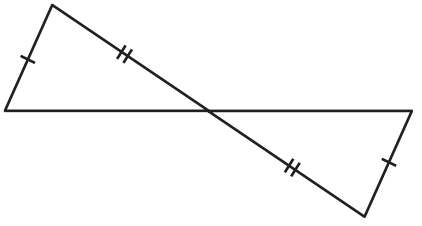
22 With the information given in the drawings, which pair of triangles can be proven congruent by the Side-Angle-Side postulate?

F

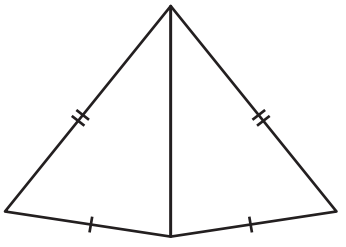
G



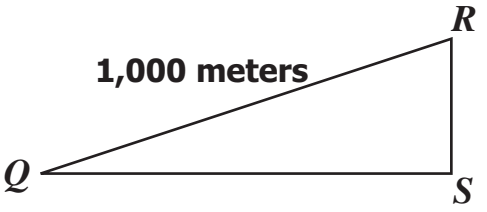
H



J



23 **Given:** $\triangle QRS$ **where** $m\angle Q = 20°$ **and** $m\angle S = 90°$



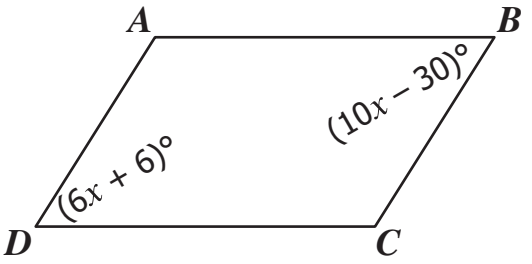
What is the length, to the nearest meter, of $\overline{RS}$ **?**

A 342 m
B 364 m
C 500 m
D 940 m

24 **Which of the following quadrilaterals is *not* a parallelogram?**

F Rectangle
G Rhombus
H Square
J Trapezoid

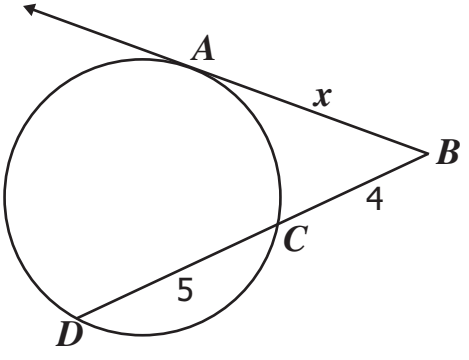
25



In parallelogram $ABCD$, the measure of $\angle C$ is —

A 82.5°
B 97.5°
C 120.0°
D 130.0°

26 **In the diagram, $\overline{AB}$ is tangent to the circle at point A, and $\overline{BD}$ intersects the circle at points C and D.**

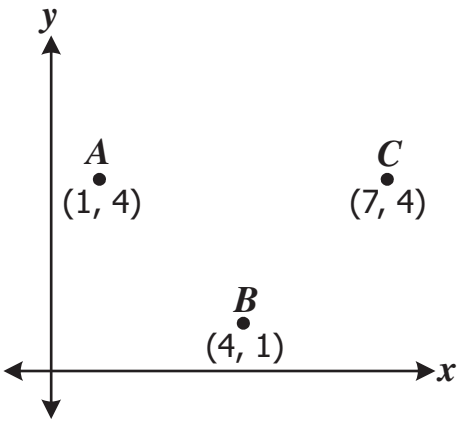


What is the value of x?

F 3
G 4
H 5
J 6

GO ON

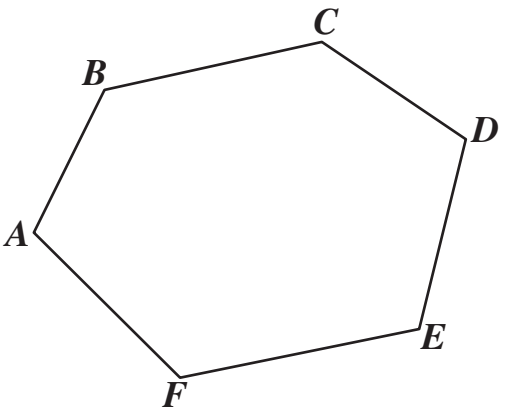
27



In the drawing above, what must be the coordinates of D to show $ABCD$ is a square?

A (7, 7)
B (4, 7)
C (4, 5)
D (4, 4)

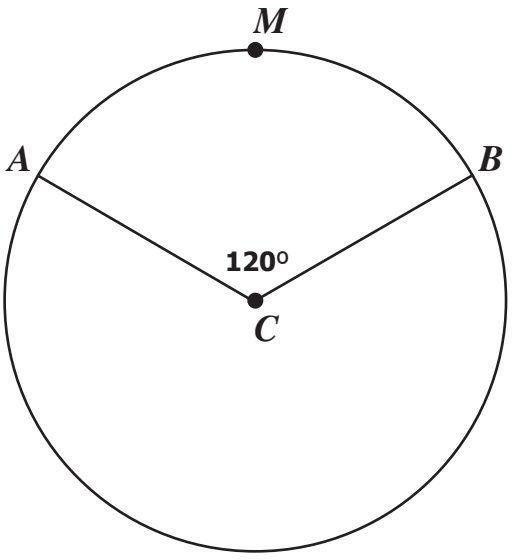
28



Given the polygon shown above, $m\angle A + m\angle F + m\angle E + m\angle D + m\angle C + m\angle B =$

F 360°
G 540°
H 720°
J 900°

29 The circumference of circle C is 144π.



What is the length of $\overset{\frown}{AMB}$?

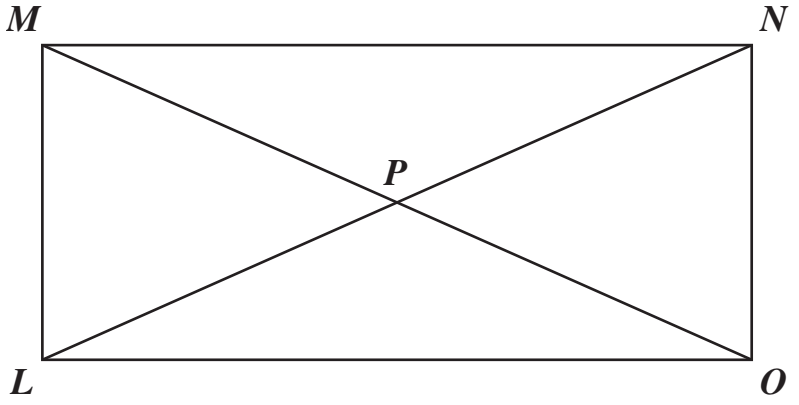
A 8π

B 16π

C 48π

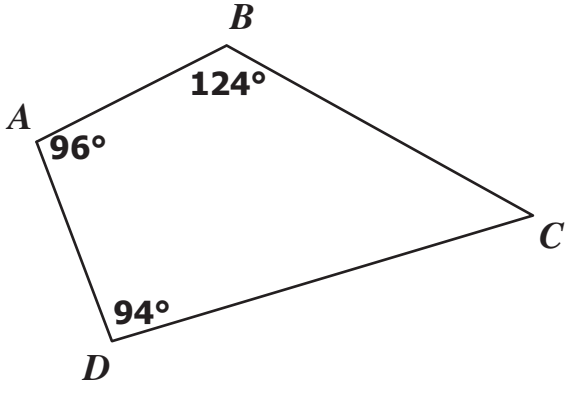
D 96π

30 **Rectangle $LMNO$ represents a park that has walking paths $\overline{LN}$ and $\overline{MO}$ that intersect at P. The length of $\overline{PN}$ is 195 feet, and the length of $\overline{MN}$ is 360 feet. What is the length of $\overline{MO}$, one of the walking paths?**



F 150 ft
G 195 ft
H 360 ft
J 390 ft

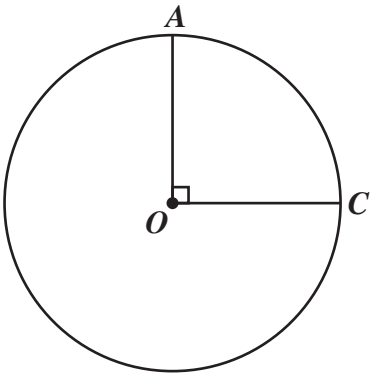
31 **What is the measure of $\angle C$ in quadrilateral $ABCD$?**



A 46°
B 56°
C 86°
D 96°

GO ON

32



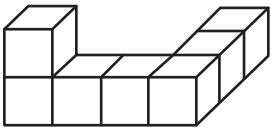
In circle O, the degree measure of $\overset{\frown}{AC}$ is —

F 45°
G 90°
H 135°
J 180°

33 When tiles are tessellated in a plane, what angle measure sum is required of the tiles surrounding a single point?

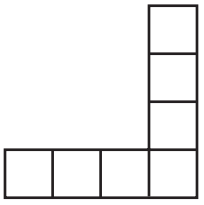
A 90°
B 180°
C 360°
D 720°

34 This solid figure is constructed with seven cubes.

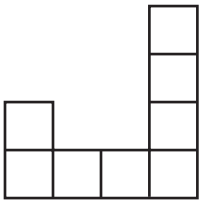


Which shape represents the top view of this three-dimensional solid?

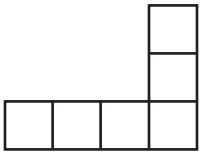
F



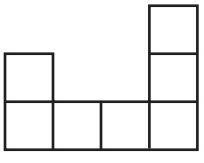
G



H



J

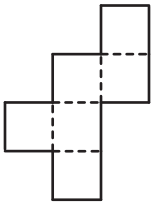


35 Which is closest to the total surface area of a cylinder with a radius of 5 inches and a height that is equal to its diameter?

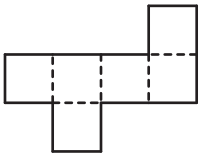
A 314 sq in.
B 471 sq in.
C 596 sq in.
D 785 sq in.

36 Which of the following nets could *not* be folded along the dotted lines to form a cube?

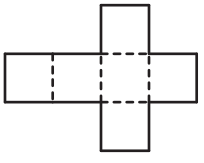
F



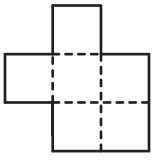
G



H



J



37 The radius of Sphere A is 2 inches, and the radius of Sphere B is 4 inches. How many times larger is the volume of Sphere B compared to the volume of Sphere A ?

A 2

B 3

C 4

D 8

38 A cylinder has a diameter of 10 inches and a height four times its radius. What is its volume?

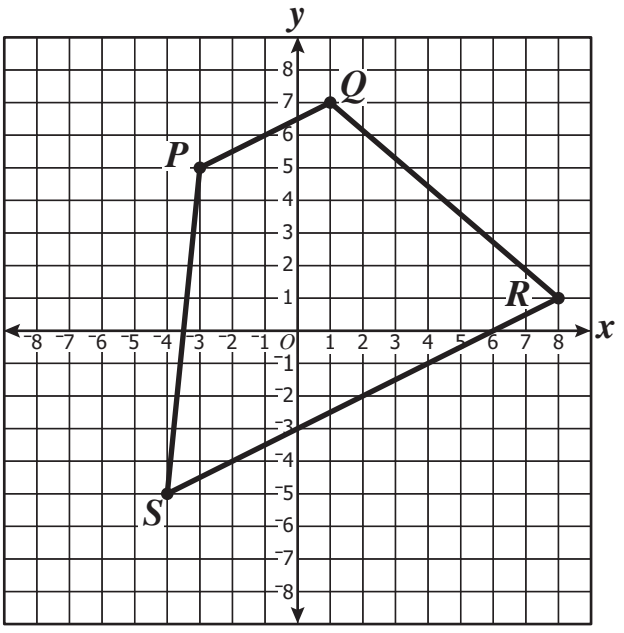
F 500π cu in.

G $2{,}000\pi$ cu in.

H $4{,}000\pi$ cu in.

J $40{,}000\pi$ cu in.

39 $P(^{-}3, 5)$, $Q(1, 7)$, $R(8, 1)$, and $S(^{-}4, ^{-}5)$ are connected to form a trapezoid.



What is the midpoint of $\overline{SR}$?

A $(0, ^{-}3)$

B $(4, ^{-}1)$

C $(3, ^{-}1.5)$

D $(2, ^{-}2)$

40 **A trapezoid is located entirely in quadrant II. If this trapezoid is reflected across the x-axis, in which quadrant will the new trapezoid be located?**

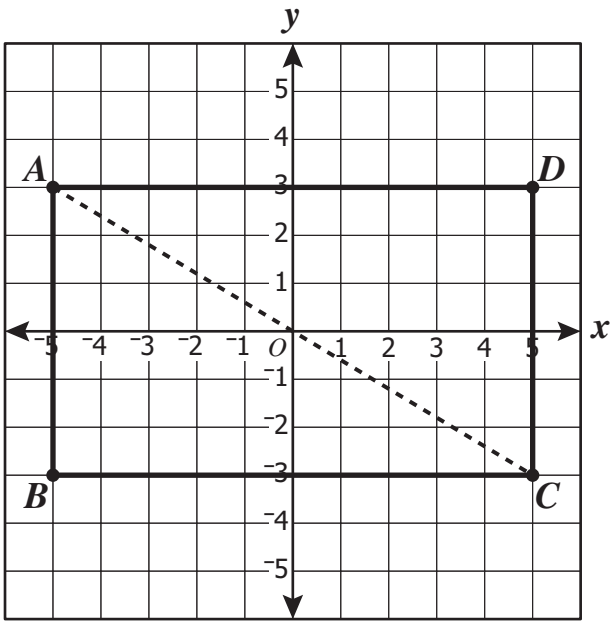
F I

G II

H III

J IV

41 Rectangle $ABCD$ is placed on a grid as shown.



Which is *closest* to the length of diagonal $\overline{AC}$?

A 8.0
B 10.0
C 11.3
D 11.7

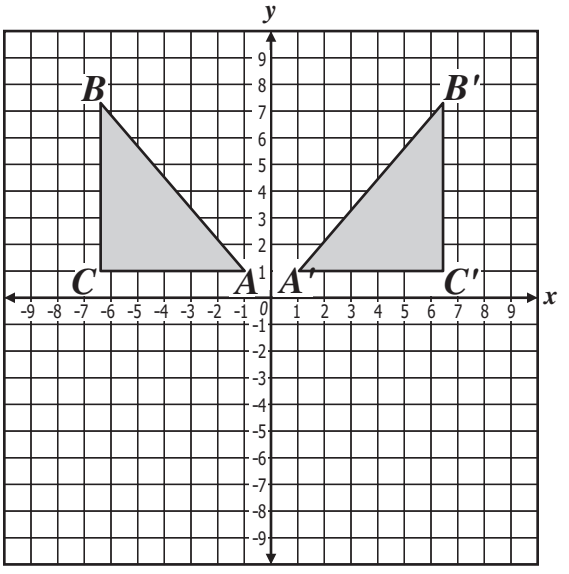
42 Which of the following letters has both line symmetry and point symmetry?

S D M H

F S
G D
H M
J H

GO ON

43 Triangle ABC was transformed into triangle $A'B'C'$. Which term most accurately describes this transformation?



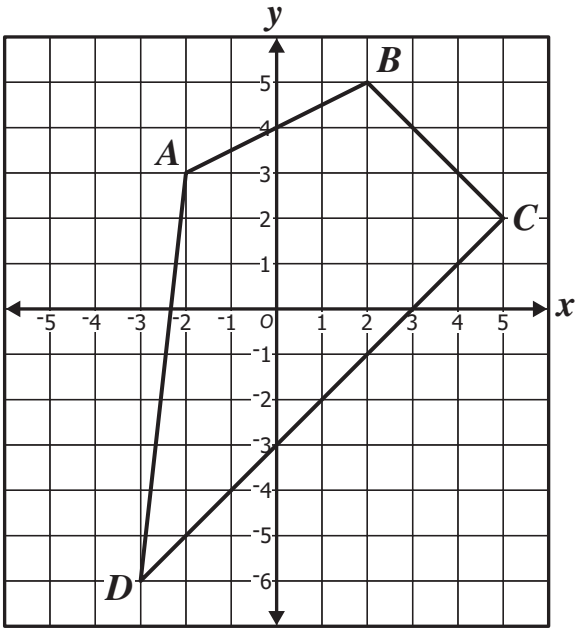
A Tessellation

B Reflection

C Rotation

D Translation

44 A quadrilateral is placed on a grid as shown.



The apparent midpoint of $\overline{BD}$ is —

F ($^{-}0.5$, $^{-}0.5$)

G (0.5, 3.5)

H (1.5, 1.5)

J (1.5, 2.5)

STOP