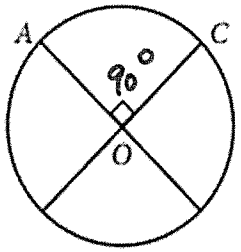
SAT Geometry Name: Key

2



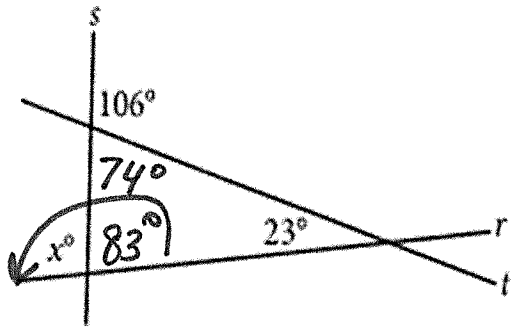
The circle above with center O has a circumference of 36. What is the length of minor arc $\overset{\frown}{AC}$?

A) 9
B) 12
C) 18
D) 36

$\frac{90^\circ}{360^\circ}$ (36) = ← Circumference

20

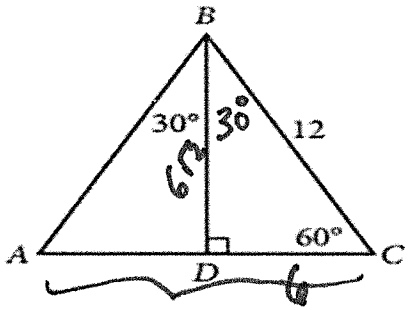
Intersecting lines r, s, and t are shown below.



What is the value of x ?

$x = 97^\circ$

19



In $\triangle ABC$ above, what is the length of $\overline{AD}$?

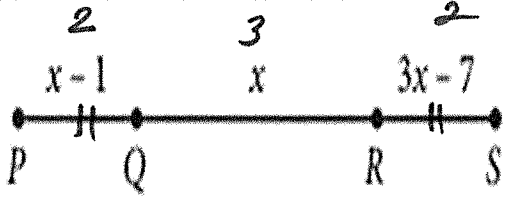
A) 4

B) 6

C) $6\sqrt{2}$

D) $6\sqrt{3}$

33



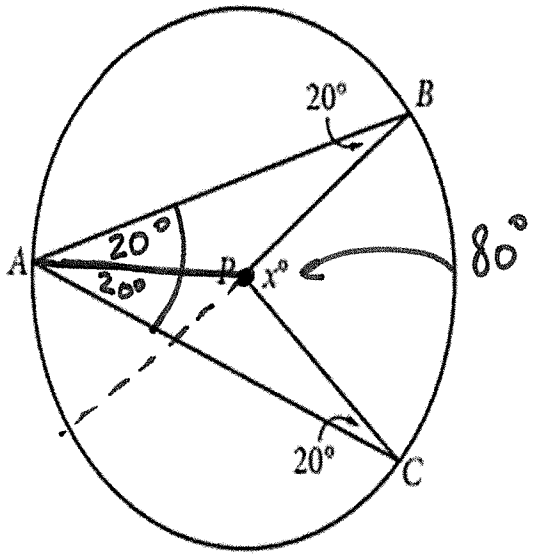
Note: Figure not drawn to scale.

On $\overline{PS}$ above $PQ = RS$. What is the length of $\overline{PS}$?

$$x - 1 = 3x - 7$$
$$-x \qquad -x$$
$$-1 = 2x - 7$$
$$+7 \qquad +7$$
$$\frac{2x}{2} = \frac{6}{2} \quad x = 3$$

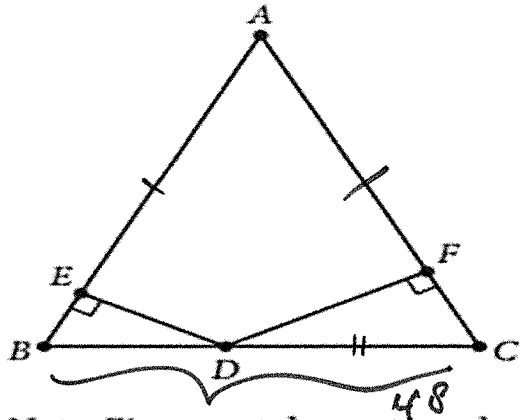
$$PS = 2 + 3 + 2 = 7$$

36



Point P is the center of the circle in the figure above. What is the value of x ?

$PA = PB = PC$



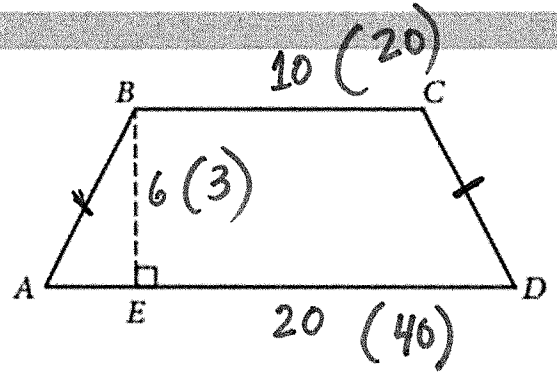
Note: Figure not drawn to scale.

Triangle ABC above is isosceles with $AB = AC$ and $BC = 48$. The ratio of DE to DF is 5 : 7. What is the length of $\overline{DC}$?

$\frac{DE}{DF} = \frac{5}{7}$

~~A) 12~~
~~B) 20~~
~~C) 24~~
D) 28

18



In quadrilateral $ABCD$ above, $\overline{BC}$ is parallel to $\overline{AD}$, and $AB = CD$. If BC and AD were each doubled and BE was reduced by 50 percent, how would the area of $ABCD$ change?

A) The area of $ABCD$ would be decreased by 50 percent.

B) The area of $ABCD$ would be increased by 50 percent.

C) The area of $ABCD$ would not change.

D) The area of $ABCD$ would be multiplied by 2.

double Cancel each other → half

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

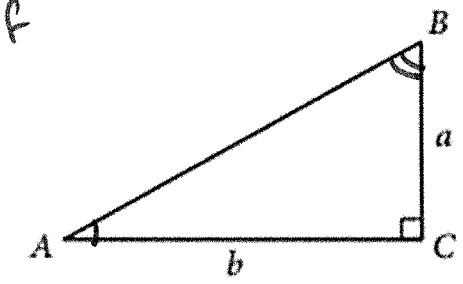
$A = \frac{1}{2}(10+20) \cdot 6$

$A = 90$ ✓

$A = \frac{1}{2}(20+40) \cdot 3$

$A = 90°$

26



Given the right triangle ABC above, which of the following is equal to $\frac{b}{a}$?

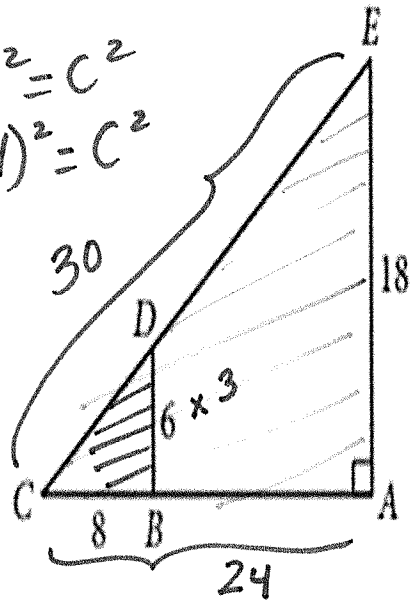
~~A) sin A~~

~~B) sin B~~ } no hypotenuse

C) tan A

D) tan B

18



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

$(18)^2+(24)^2=c^2$

30

In the figure above, $\overline{BD}$ is parallel to $\overline{AE}$. What is the length of $\overline{CE}$?

$\frac{BD}{EA}$

$CE = 30$

27

In the xy-plane, the graph of $2x^2 - 6x + 2y^2 + 2y = 45$ is a circle. What is the radius of the circle?

A) 5

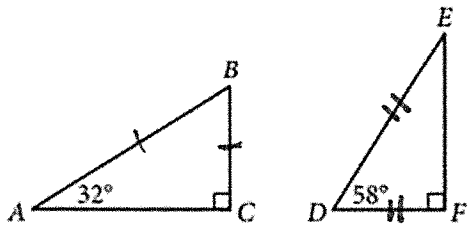
B) 6.5

C) $\sqrt{40}$

D) $\sqrt{50}$

Complete the square

16



Triangles ABC and DEF are shown above. Which of the following is equal to the ratio $\frac{BC}{AB}$?

A) $\frac{DE}{DF}$

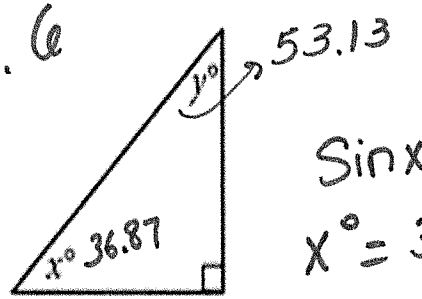
B) $\frac{DF}{DE}$

C) $\frac{DF}{EF}$

D) $\frac{EF}{DE}$

17

$\cos(53.13) = 0.6$

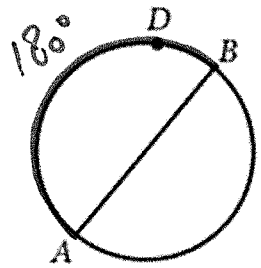


$\sin x° = 0.6$

$x° = 36.87$

In the triangle above, the sine of $x°$ is 0.6. What is the cosine of $y°$?

24



$\frac{180°}{360°} \cdot 2\pi r = 8\pi$

$r = 8$

In the circle above, segment AB is a diameter. If the length of arc $\overset{\frown}{ADB}$ is 8π, what is the length of the radius of the circle?

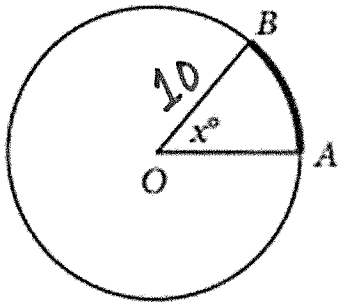
A) 2

B) 4

C) 8

D) 16

36



Note: Figure not drawn to scale.

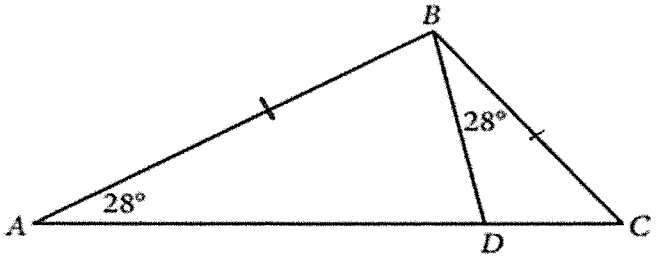
In the figure above, the circle has center O and has radius 10. If the length of arc $\overset{\frown}{AB}$ (shown in bold) is between 5 and 6, what is one possible integer value of x ?

$5 < \frac{x^\circ}{360^\circ} \cdot 20\pi < 6$

$5 < 0.17x < 6$

$29.41 < x^\circ < 35.29$

11



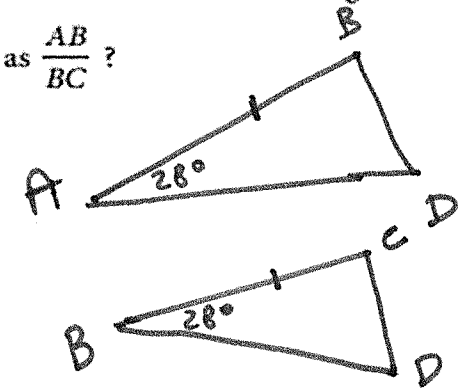
In the figure above, which of the following ratios has the same value as $\frac{AB}{BC}$?

A) $\frac{BD}{DC}$

B) $\frac{BC}{AC}$

C) $\frac{AD}{BD}$

D) $\frac{DC}{BC}$



15

A circle is graphed in the xy-plane. If the circle has a radius of 3 and the center of the circle is at $(4, -2)$, which of the following could be an equation of the circle?

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

~~A) $(x-4)^2+(y-2)^2=9$~~

24

$V = \frac{4}{3}\pi r^3$ → Cubed

The formula for the volume of a sphere with radius r is shown above. The radius of the planet Jupiter is about 11 times the radius of planet Earth. Assuming that planets are spheres, about how many times larger is the volume of Jupiter than the volume of Earth?

A) 11

B) 121

C) 1,331

D) 1,775

$(r)^3_{Jupiter} = (11r)^3_{earth}$

$V = \frac{4}{3}\pi(11r)^3$

21

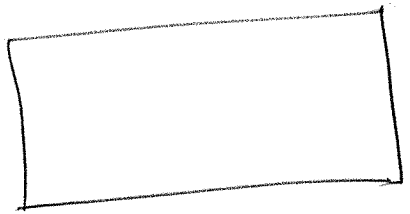
A landscaper is designing a rectangular fountain with a 4-foot-wide path around it. The equation $A = 4p + 64$ will relate the area A, in square feet, of the path to the perimeter p, in feet, of the fountain. In the design, how many feet will the perimeter of the fountain increase for each additional square foot of the path's area?

A) $\frac{1}{64}$

B) $\frac{1}{4}$

C) 4

D) 64



$A = 4p + 64$

$4p = A - 64$

$p = \frac{1}{4}A - 16$

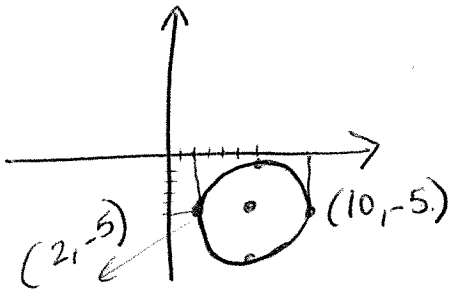
SAT Circles

9

$(x-6)^2+(y+5)^2=16$

In the xy-plane, the graph of the equation above is a circle. Point P is on the circle and has coordinates $(10,-5)$. If $\overline{PQ}$ is a diameter of the circle, what are the coordinates of point Q ?

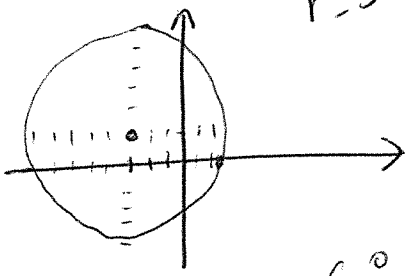
A) $(2,-5)$
B) $(6,-1)$
C) $(6,-5)$
D) $(6,-9)$



29

A circle in the xy-plane has equation $(x+3)^2+(y-1)^2=25$. Which of the following points does NOT lie in the interior of the circle?

A) $(-7,3)$
B) $(-3,1)$
C) $(0,0)$
D) $(3,2)$



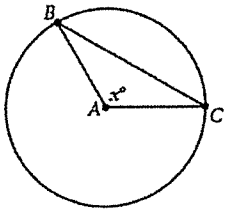
20

Points A and B lie on a circle with radius 1, and arc $\overset{\frown}{AB}$ has length $\frac{\pi}{3}$. What fraction of the circumference of the circle is the length of arc $\overset{\frown}{AB}$?

34

In a circle with center O, central angle AOB has a measure of $\frac{5\pi}{4}$ radians. The area of the sector formed by central angle AOB is what fraction of the area of the circle?

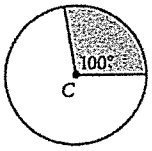
20



Note: Figure not drawn to scale.

In the circle above, point A is the center and the length of arc $\overset{\frown}{BC}$ is $\frac{2}{5}$ of the circumference of the circle. What is the value of x ?

34



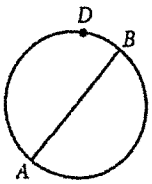
Point C is the center of the circle above. What fraction of the area of the circle is the area of the shaded region?

27

In the xy-plane, the graph of $2x^2-6x+2y^2+2y=45$ is a circle. What is the radius of the circle?

A) 5
B) 6.5
C) $\sqrt{40}$
D) $\sqrt{50}$

24



In the circle above, segment AB is a diameter. If the length of arc $\overset{\frown}{ADB}$ is 8π, what is the length of the radius of the circle?

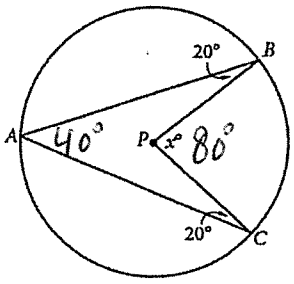
A) 2
B) 4
C) 8
D) 16

$\frac{180^\circ}{360^\circ} \cdot 2\pi r = 8\pi$

$r = 8$

done before.

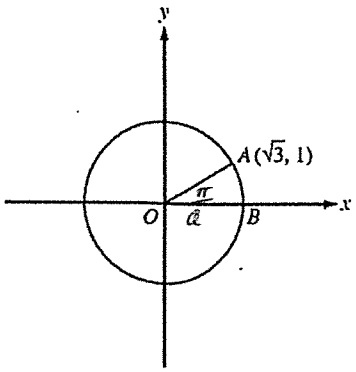
36



Point P is the center of the circle in the ~~figure above.~~ What is the value of x ?

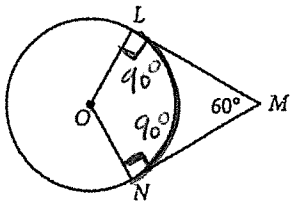
$\angle A = 40^\circ$

19



In the xy-plane above, O is the center of the circle, and the measure of $\angle AOB$ is $\frac{\pi}{a}$ radians. What is the value of a ?

36

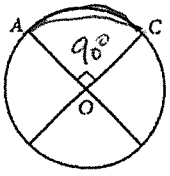


In the figure above, point O is the center of the circle, line segments LM and MN are tangent to the circle at points L and N, respectively, and the segments intersect at point M as shown. If the circumference of the circle is 96, what is the length of minor arc $\overset{\frown}{LN}$?

$\frac{120^\circ}{360^\circ} \cdot 96 =$ $C = 96$

32

2



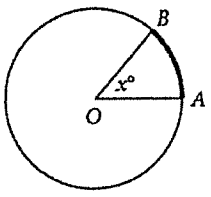
The circle above with center O has a circumference of ~~36.~~ What is the length of minor arc $\overset{\frown}{AC}$?

A) 9
B) 12
C) 18
D) 36

$\frac{90^\circ}{360} \cdot 36 =$

36

done before =



Note: Figure not drawn to scale.

In the figure above, the circle has center O and has radius 10. If the length of arc $\overset{\frown}{AB}$ (shown in bold) is between 5 and 6, what is one possible integer value of x ?