CIRCLES ON TAKS NAME_____CLASS PD_____DUE_____

Circumference	circle	$C = 2\pi r$ or $C = \pi d$
Area	rectangle	$A = lw$ or $A = bh$
	triangle	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$
	trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$ or $A = \frac{(b_1 + b_2)h}{2}$
	circle	$A = \pi r^2$
Surface Area	cube	$S = 6s^2$
	cylinder (lateral)	$S = 2\pi rh$
	cylinder (total)	$S = 2\pi rh + 2\pi r^2$ or $S = 2\pi r(h + r)$
	cone (lateral)	$S = \pi rl$
	cone (total)	$S = \pi rl + \pi r^2$ or $S = \pi r(l + r)$
	sphere	$S = 4\pi r^2$
Volume	prism or cylinder	$V = Bh^*$
	pyramid or cone	$V = \frac{1}{3}Bh^*$
	sphere	$V = \frac{4}{3}\pi r^3$
Pi	π	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$

B represents the area of the Base of a solid figure.

$B = base = area = \pi r^2$

1.

Describe the effect on the area of a circle when the radius is doubled.

F The area is reduced by $\frac{1}{2}$.

G The area remains constant.

H The area is doubled.

J The area is increased four times.

On the calculator: π *is* $2nd$ ^

$Area = \pi r^2$

Let's say the radius is 2. Find the area.

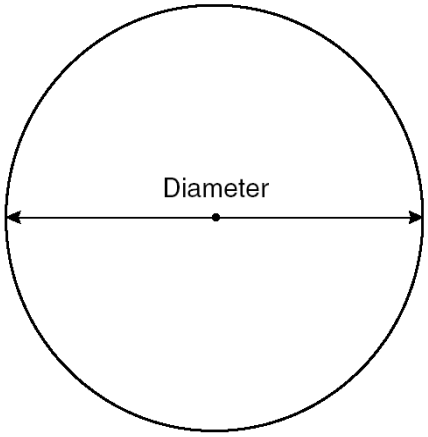
_____

Now let's double the radius to 4 and find the area. _____

How do these two numbers relate?_____

2.

A circle and its diameter are shown below.



The value of π is the result of which of the following ratios comparing a circle's circumference to its diameter?

A $\frac{C}{r}$

B $\frac{d}{C}$

C $\frac{r^2}{C}$

D $\frac{C}{d}$

The formula for circumference is : $C = \pi d$

We want to solve for π such that the rest is on the other side of the equation.

3.

Ginny made a cylindrical clay vase for her art project. If the vase has a volume of 339 cubic inches and a diameter of 6 inches, which is closest to the height of the vase?

F 36 in.

G 18 in.

H 12 in.

J 3 in.

Volume of a cylinder is _____

We have the volume _____

We have the diameter_____Radius_____

All that is missing is the height. Find it.

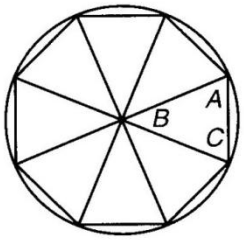
4.

What would you need to find out how much air is needed to fill a basketball?

A. Surface area
B. What the basketball is made of
C. Circumference
D. Volume

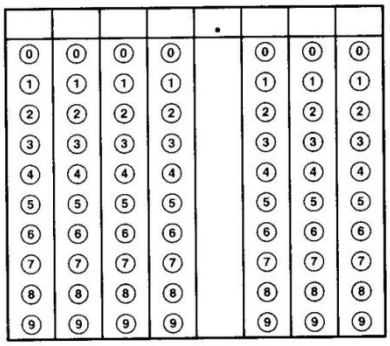
5.

A tile pattern is being laid on a patio floor in the shape of a regular octagon inscribed in a circle.



What is the measure in degrees of $\angle A$ in the diagram above?

Record your answer and fill in the bubbles. Be sure to use the correct place value.



A circle has _____degrees. So, the sum of the interior angles must add up to _____degrees.

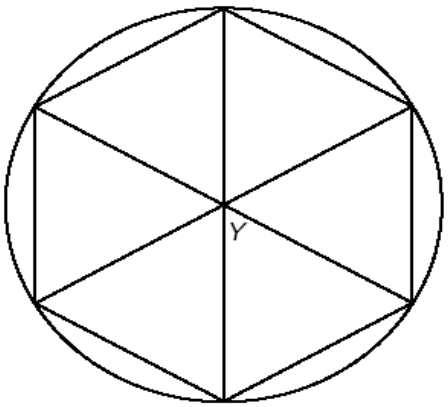
There are 8 "pieces if pie." So each angle $B = 360 \div ?$ Therefore Angle B=_____

These make **ISOSCELES** triangles so the angles A and C must be_____

The sum of the interior angles of a triangle adds up to _____degrees. therefore angle A=_____

6.

A regular hexagon is drawn in a circle as a design on a window. Opposite vertices are connected by line segments.



What is the measure of angle Y in degrees?

Follow the same process as in #5.

7.

A store sells milk in two different containers. The first container is a rectangular prism that has a height of 8 inches and a square base with a side length of 2 inches. The other container is a cylinder with a radius of 1.75 inches and a height of 8 inches. Which best describes the relationship between the two containers?

A The prism has the greater volume.

B The cylinder has the greater volume.

C The volumes are equivalent.

D The volumes cannot be determined.

draw a picture of a rectangular prism and a cylinder!

8.

A cylindrical water tank has a radius of 2.8 feet and a height of 5.6 feet. The water tank is filled to the top. If water can be pumped out at a rate of 36 cubic feet per minute, about how long will it take to empty the water tank?

F 3 h

G 2 h

H 4 min

J 1 min

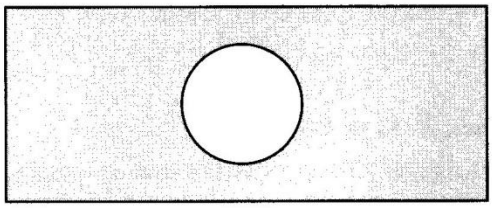
Write out the units of the volume and time
Volume = BH

Volume = _____
How fast does the water come out?____ *this is a rate*

How long to empty it?_____
looking at the units what do you need to do to get an answer of just time?

9.

Ed is installing a new bathroom sink countertop. The rectangular countertop is 5 feet 4 inches long by 2 feet 2 inches wide. He plans to tile the countertop with square tiles that are 2 inches on each side. The circular sink has a diameter of 16 inches.



What is the minimum number of tiles Ed will need to cover the countertop area, not including the sink?

A 732

B 366

C 410

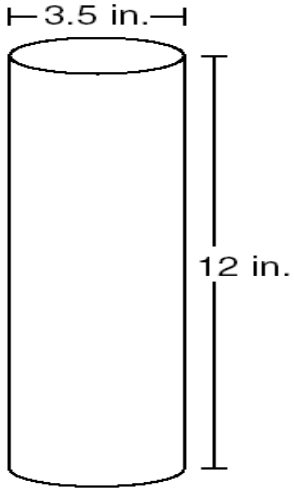
D 404

Careful! *! This is like one of the rectangle ones we studied. Make sure to draw out the tiles with their dimensions!! Hummmmm! Do we want to work this in inches or feet?? Notice both dimensions are used……*

- What is the area of the counter top in inches?
- A = LW
- L = 5ft 4 " = _____ inches
- W =2 ft 2 in = _____inches
- A = _____
- How big is the sink?
- $A = \pi r^2$
- A = _____
- Counter – sink = ____-_____ = _____ (area to be tiled)
- Each tile is 2in by 2 inches. How big is each tile? _____.
- How many will he need to cover the counter?_____

10.

The owners of Neatly Packaged Company make a cylindrical container that has the dimensions shown below.



What is the approximate lateral surface area available for the package label?

A 131.95 in.^{2}

B 151.19 in.^{2}

C 263.89 in.^{2}

D 115.45 in.^{2}

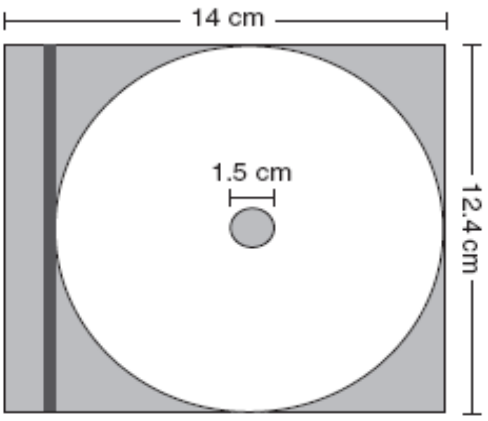
Lateral surface area does not include the ends. It is just the area of the cylinder without the ends.
If you cut a cylinder down the side, you will see that the width is the circumference.

$C = \pi d =$_____

Circumference * height = area

11.

The figure below shows a CD in its rectangular storage case.



Which is closest to the area of the storage case not occupied by the CD?

A 55 cm^2

B 46 cm^2

C 51 cm^2

D 60 cm^2

You should be able to find the area of the rectangle
and the area of the circle,
subtract them.

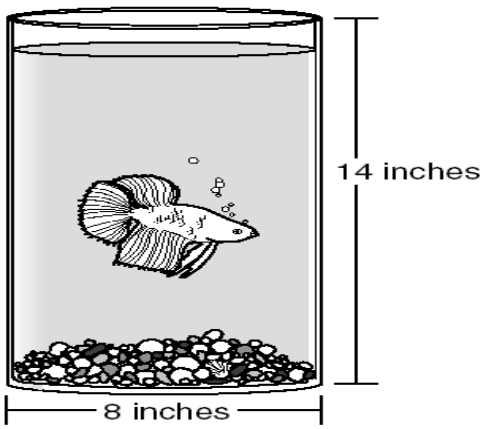
Now you have to deal with the hole in the middle. Add it? Subtract it? Show work.

12.

A cylinder has a base where the radius is $(2x + 4)$. The height is $3x$. What is the volume?

$A.\ 3x(2x + 4)(2x + 4)\pi$
$B.\ 3x(4x^2 + 16)\ \pi$
$C.\ (12x^3 + 48x^2 + 48)\pi$
$D.\ (12x^2 + 48x\ )\pi$

13.



F $\pi(8)^2(14) - 50$

G $\pi(8)^2(14 - 2) - 50$

H $\pi(4)^2(14 - 2) - 50$

J $\pi(14 - 2)^2(4) - 50$

Steven has a cylindrical fish tank with a diameter of 8 inches and a height of 14 inches. He placed some rocks that took up 50 cubic inches at the bottom of the tank. Then he filled the tank with springwater to 2 inches from the top. Which is the best strategy for determining the volume of water the fish has for swimming?

Think, $volume = \pi r^2$

What is the radius?_____

Only one answer has $\pi \times$ ____ ^{2} in it.

14.

Mr. Kelly's company manufactures a cylindrical soup can that has a diameter of 6 inches and a volume of 226 cubic inches. If the diameter stays the same and the height is doubled, what will happen to the can's volume?

A It will remain the same.

B It will double.

C It will triple.

D It will quadruple.

Find the height:_____

Formula V =

Double that height. _____

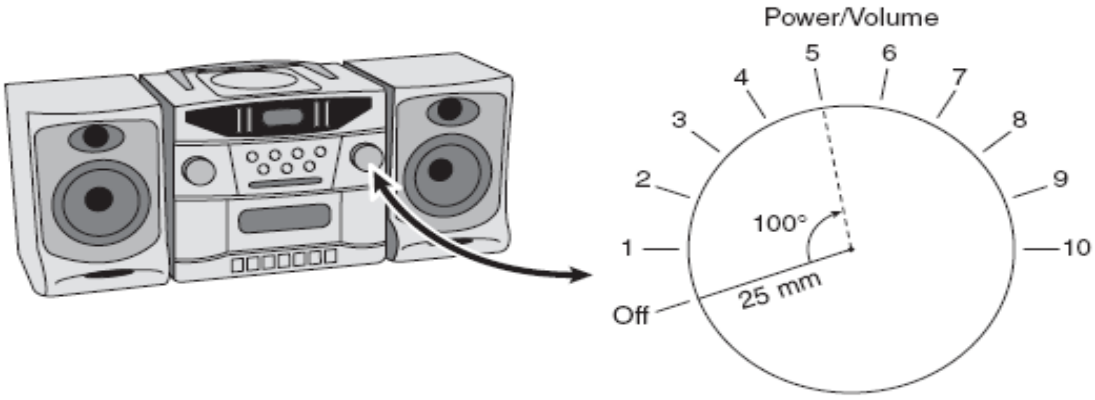
Find volume._____

Compare the volumes

_____

15.

A diagram of a power/volume control knob on a stereo is shown below.



When the stereo is turned on and the knob is turned to a volume level of 5, the knob is rotated 100° from its off position. What is the approximate arc length of the path traveled by the knob's rotation from the off position to a volume level of 5?

F 545 mm

G 157 mm

H 22 mm

J 44 mm

This is a ratio problem. *So we will set up a proportion and cross multiply.*

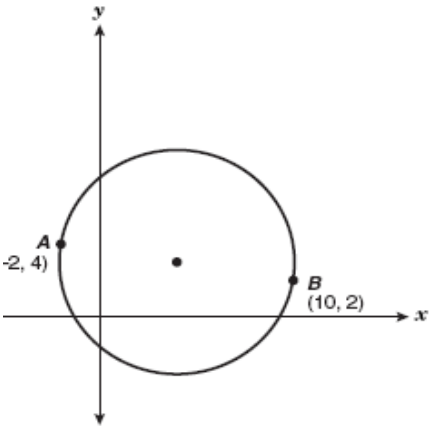
Find the Circumference. Formula _____

How many degrees in a circle?_____

	Degrees : Circumference
Whole circle	**:** _____
Wedge of circle	**:** _____

16.

$\overline{AB}$ is a diameter of the circle shown below.



Which is closest to the length of the radius of the circle?

A 3.1 units

B 4.3 units

C 6.1 units

D 12.2 units

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

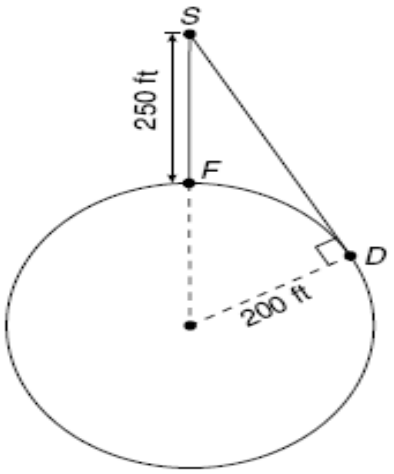
The proper way to find this diameter is to use the distance formula inset above. Let point A be point 1 and point b be point 2. Find the distance.

Remember the RADIUS would be ½ of this. Show work:

Now logic. Pretend A and B are dropped down to the X axis. What is the distance from -2 to 10?_____ Based on THIS circle, would that be close to the diameter?_____ What answer does that lead you to?_____

17.

Mr. Krueger attended an event at the Good Time Sports Arena. The arena is in the shape of a circle with a radius of 200 feet. He parked his car in the lot at point S, which is 250 feet away from the entrance at point F.



Mr. Krueger left the arena through the exit at point D and walked a straight-line path to his parked car. About how far away was his parked car from the exit at point D?

F 200 ft
G 403 ft
H 492 ft
J 650 ft

Is this a circle problem or a triangle problem?

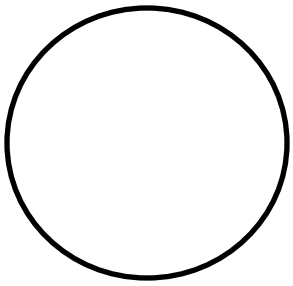
With what you know about circles, how long is it from the center of the circle to F? _____

You finish.

18.

Points M and N lie on circle P. If circle P has a radius r, which of the following statements cannot be true?

A $MN > r$
B $MN > 2r$
C $MN = r$
D $MN = 2r$



Draw a radius on the circle.

A. Make a point M and a point N and connect them. (Straight line) Remember, you can move M and N around.
B. Could MN be longer than R?___
C. Could MN be the same length as r?_____
D. What is 2r?_____ Can MN be the same as 2r_____
E. Can MN be longer than 2r?___

19.

Look at the solid sphere and the cylinder containing water shown in Figure 1.

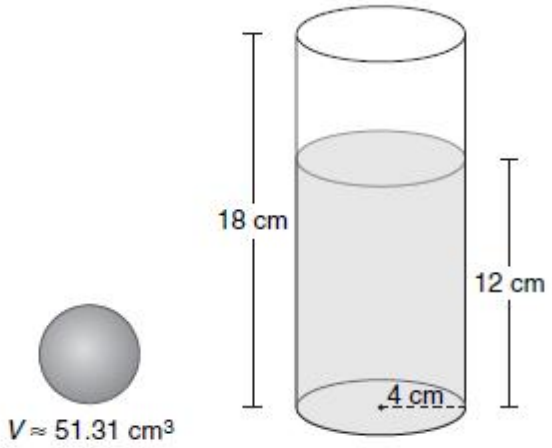


Figure 1

Figure 2 shows the sphere submerged in the water inside the cylinder.

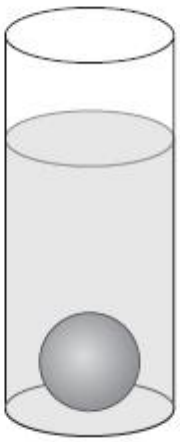


Figure 2

Which is closest to the height of the water level in Figure 2?

F 13 cm

G 17 cm

H 15 cm

J 11 cm

Remember Archimedes principle? Volume displaces volume. This is not hard if you take it step by step.
Step 1.
Find the volume of water in the cylinder. Formula?_____
Does the 18 mean anything?
Step 2.
While the volume of the sphere is given, What is the formula for volume of a sphere_____
What is the volume?_____
Step 3. Remember Archimedes, just add the two. _____+ _____=_____
Step 4. Using new volume and the original base, find the new height.

20.

The wheels on Lee's bike each have a circumference of approximately 7 feet. Which of the following equations could be used to determine y, the total distance traveled in feet for each wheel as a function of x, the number of wheel revolutions?

F $y = \frac{7}{x}$

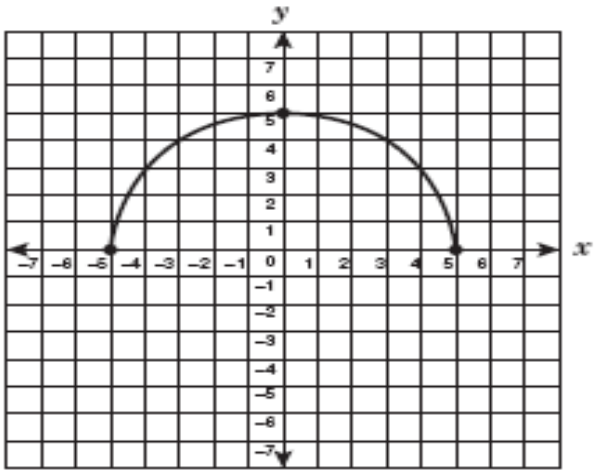
G $y = 7 + x$

H $y = 7x$

J $y = 7 - x$

21.

The graph of the function $y = \sqrt{25 - x^2}$ is shown on the coordinate grid below.



What is the domain of the function?

F $x \leq 5$

G $x \geq -5$

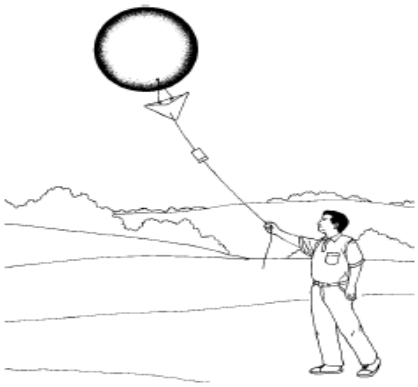
H $-5 \leq x \leq 5$

J $0 \leq x \leq 5$

Remember what domain and range are.

22.

Mr. Norstam has just released a weather balloon with a diameter of about 3 feet. As the weather balloon rises, it will expand and eventually burst because of the changes in the atmospheric pressure.



If the weather balloon rises and expands to 1.5 times its diameter before it bursts, what will be its change in volume?

F The volume will increase to less than 2 times the original volume.

G The volume will increase to between 2 and 3 times the original volume.

H The volume will increase to between 3 and 4 times the original volume.

J The volume will increase to between 4 and 5 times the original volume.

Looks hard, but you have the tools:
Volume of a sphere. Formula?_____
Find the volume of the balloon.
What was its diameter?_____ Multiply that by 1.5_____
Find the volume of the expanded balloon.
Divide new volume by original volume and CAREFULLY make a decision.

23.

A building-trades class built a circular spinner for the school carnival. The spinner has a diameter of 48 inches and is divided into 12 congruent sectors. What is the approximate area of each of the sectors on this spinner?

F 603 in.^{2}

G 151 in.^{2}

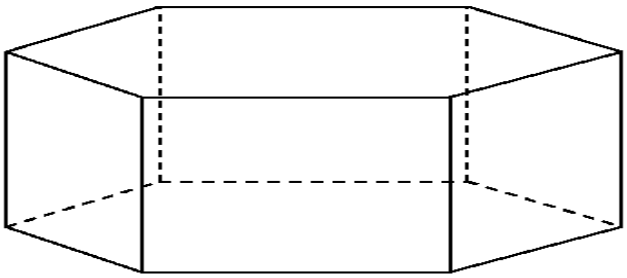
H 25 in.^{2}

J 13 in.^{2}

SHOW YOUR WORK:

24.

The drawing shows a 3-dimensional solid.



Which best represents the shape of the solid when viewed from the top?

F Pentagon
G Hexagon
H Heptagon
J Octagon

25.

Other Polygons -------Poly (many) gon (sides)

Triangles – Three sided figures
Quadrilaterals – 4 sides

_____ – Five sided figures

_____– Six sided figures

Heptagons – Seven sided figures

_____ – 8 sided figures

_____– 9 sides

Decagons -10sides