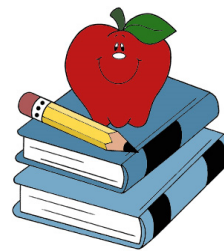


Warm Up Grade 8

Date: Apr. 7



Use mental math

1) 12×5
 60

2) $151 - 29$
 $151 - 30 = 121$ so add 1
 $151 - 29 = 122$

subtracted too many

$12 \times 3 = 36$
half double

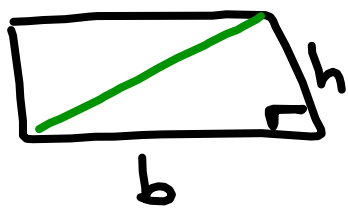
3) 24×1.5
 $24 \times 1 = 24$
 $24 \times 0.5 = 12$

 36

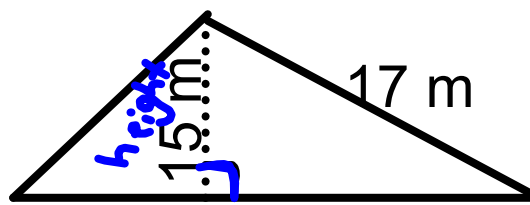
From last year

1) Find the area

area = ? m²



$A_{\square} = b \times h$



$22 \text{ m} = \text{base}$

$A_{\triangle} = \frac{b \times h}{2}$

$= \frac{22 \text{ m} \times 15 \text{ m}}{2}$

$= \frac{330 \text{ m}^2}{2}$

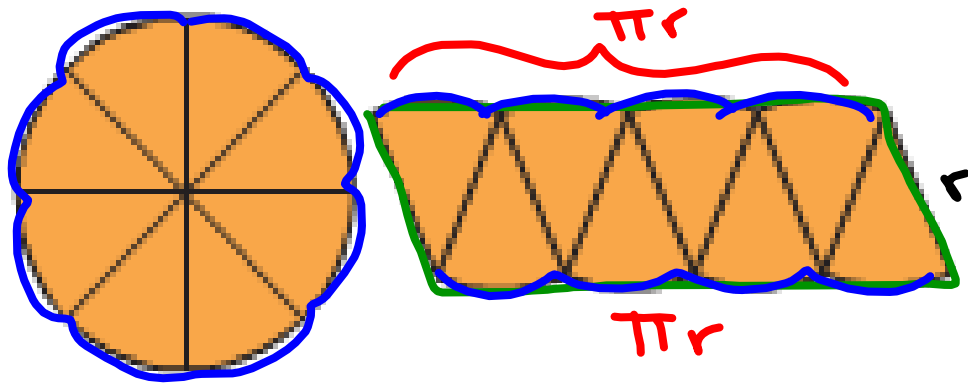
$A_{\triangle} = 165 \text{ m}^2$

Discuss pg. 149 with students

Sector - a part of the circle

Suppose a circle was cut into 8 congruent sectors.

The 8 sectors were then arranged to approximate a parallelogram.



$$A_{par} = b \times h$$

$$C_{ir} = \pi d$$

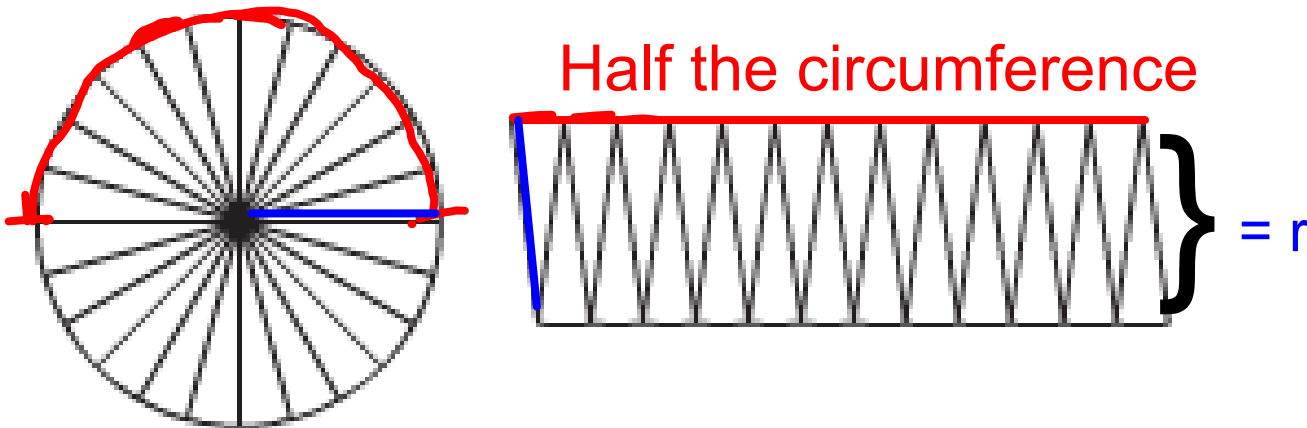
or

$$C = 2\pi r$$

The more congruent sectors we use, the closer the area of the parallelogram is to the area of the circle.

Here is a circle cut into 24 congruent sectors.

The 24 sectors were then arranged to approximate a parallelogram.



$$A = b \times h$$

$$= (\text{Half the circumference}) \times (r)$$

$$= \pi r \times r$$

$$= \pi r^2$$

where $r^2 = r \times r$

Circumference = $2\pi r$

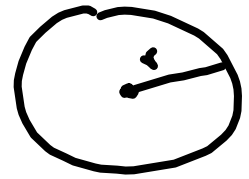
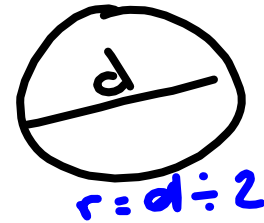
Half of Circumference = $\underline{2\pi r}$

Half of Circumference = $1\pi r$

$$A_o = \pi r^2$$

$$A_o = \pi \times r \times r$$

Area of a Circle



We have a formula to find the area of a circle,

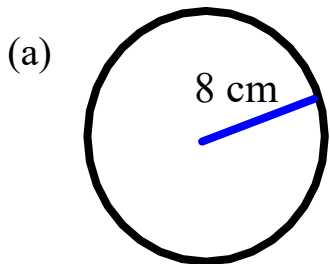
$$\text{Area of Circle} = \pi r^2$$

$$\text{Area of Circle} = \pi \times r \times r$$

That is the area of a circle is π times the radius squared (which means radius x radius).
 π always = 3.14

Examples:

Find the area for each of the following:



Given

$$r = 8 \text{ cm}$$

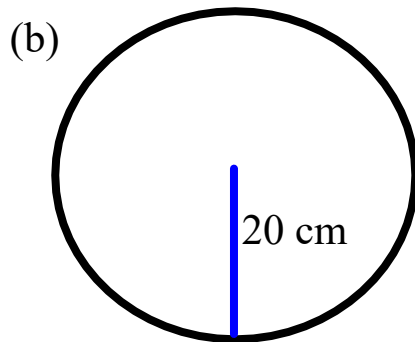
$$A_0 = ?$$

$$A_0 = \pi r^2$$

$$A_0 = \pi \times r \times r$$

$$A_0 = 3.14 \times 8 \text{ cm} \times 8 \text{ cm}$$

$$A_0 = 200.96 \text{ cm}^2$$



Given

$$r = 20 \text{ cm}$$

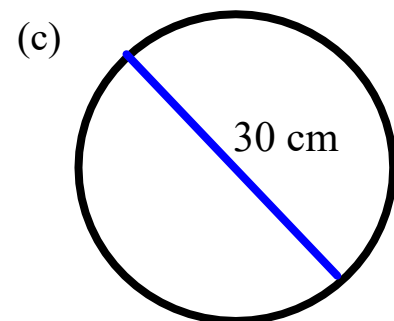
$$A_0 = ?$$

$$A_0 = \pi r^2$$

$$= \pi \times r \times r$$

$$= 3.14 \times 20 \text{ cm} \times 20 \text{ cm}$$

$$= 1256 \text{ cm}^2$$



Given

$$d = 30 \text{ cm}$$

$$\Downarrow$$
$$r = 15 \text{ cm}$$

$$A_0 = ?$$

$$A_0 = \pi r^2$$
$$= \pi \times r \times r$$

$$= 3.14 \times 15 \text{ cm} \times 15 \text{ cm}$$

$$= 706.5 \text{ cm}^2$$

Area of a Circle

We have a formula to find the area of a circle,

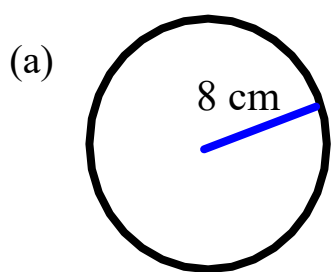
$$\text{Area of Circle} = \pi r^2$$

That is the area of a circle is π times the radius squared (which means radius x radius).
always = 3.14

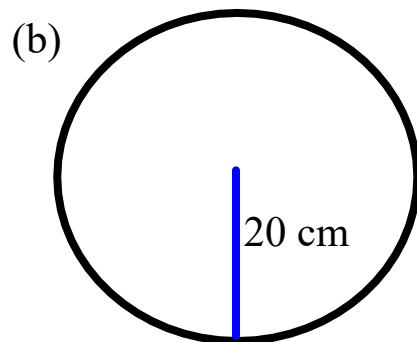
π

Examples:

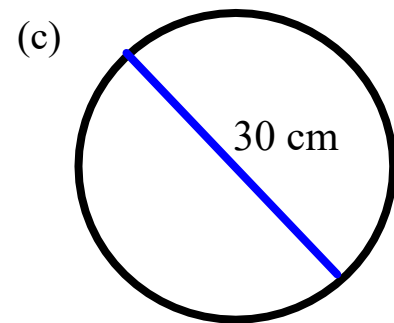
Find the area for each of the following:



$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 8 \times 8 \\ &= 200.96 \text{ cm}^2 \end{aligned}$$



$$\begin{aligned} A &= \pi \times r \times r \\ &= 3.14 \times 20 \times 20 \\ &= 1256 \text{ cm}^2 \end{aligned}$$



$$\begin{aligned} d &= 30 \\ r &= 15 \\ A &= \pi \times r \times r \\ &= 3.14 \times 15 \times 15 \\ &= 706.5 \text{ cm}^2 \end{aligned}$$

To estimate the area of
a circle $\approx 3 \times r \times r$

Class / Homework

Page 151

#1, #2, #3, #5 (Show work)

Short test on Cylinders in 6 days

$$\begin{array}{l} r = 8 \quad \xrightarrow{\times 3} \quad r = 24 \\ A_5 = \pi r^2 \\ = 3.14 \times 8 \times 8 \\ = 200.96 \end{array} \qquad \begin{array}{l} A_0 = \pi r^2 \\ = 3.14 \times 24 \times 24 \\ = 1806.64 \end{array} \qquad \begin{array}{l} A = \pi r^2 \\ \pi \times r \times r \\ \pi (3r) \times (3r) \\ = 9\pi r^2 \end{array}$$

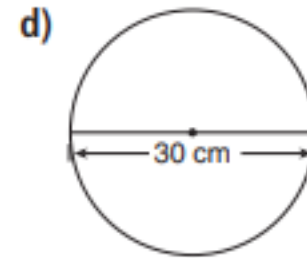
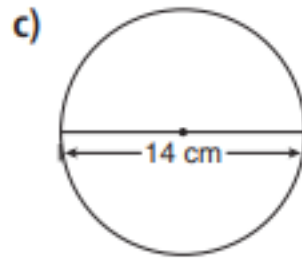
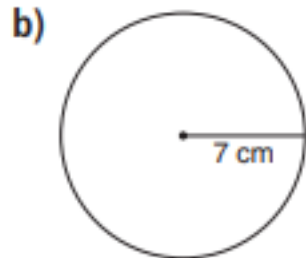
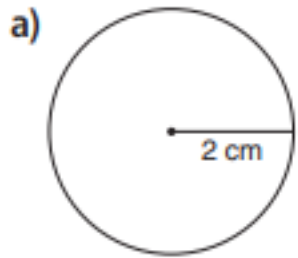
$\xrightarrow{\times 9}$

So when you triple the radius the area becomes 9 times more.

WS 151

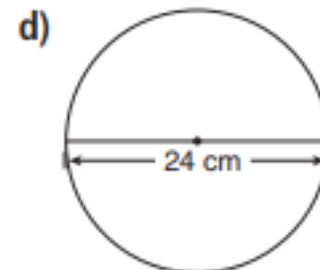
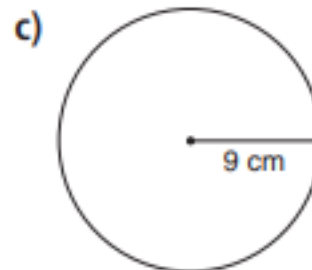
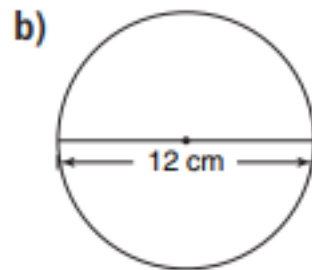
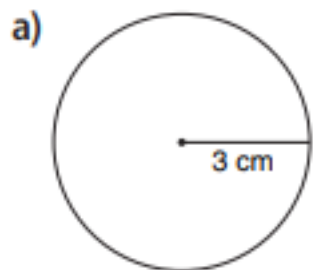
1. Calculate the area of each circle.

~~Estimate to check your answers are reasonable.~~



2. Calculate the area of each circle. Give your answers to two decimal places.

Estimate to check your answers are reasonable.



- 3.** Use the results of question **2c** . What happens to the area in each case?
- a) You double the radius of a circle.
 - b) You triple the radius of a circle.
 - c) You quadruple the radius of a circle.
- Justify your answers.

- 5.** In the biathlon, athletes shoot at targets. Find the area of each target.
- a) The target for the athlete who is standing is a circle with diameter 11.5 cm.
 - b) The target for the athlete who is lying down is a circle with diameter 4.5 cm.
- Give the answers to the nearest square centimetre.