Curriculum Outcome

(N5) Determine the square root of positive rational numbers that are perfect squares.

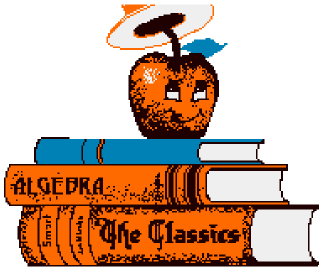
(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

(SS2) Determine the surface area of composite 3-D objects to solve problems

(N4) **Explain and apply the order of operations, including exponents, with and without technology.**

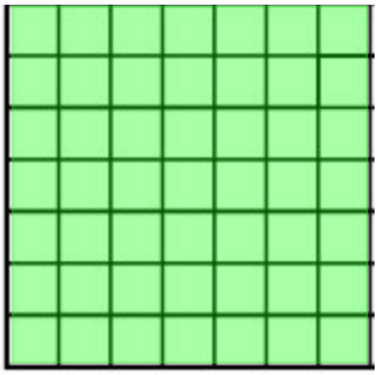
WARM UP

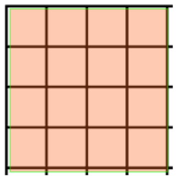
Without Calculators



1) i) Determine the Area of the Shaded Squares

ii) Determine the perimeter

a) 

b) 

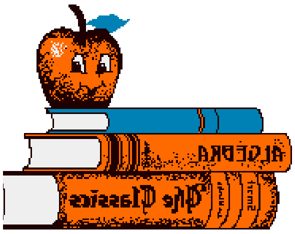
2) Find the square root of the following:

a) $\frac{1}{144}$

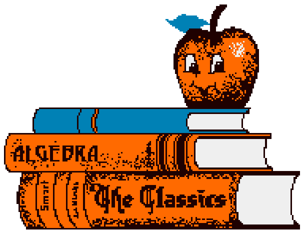
b) $\frac{121}{81}$

c) 36

3) Calculate the number whose square root is $\frac{4}{7}$



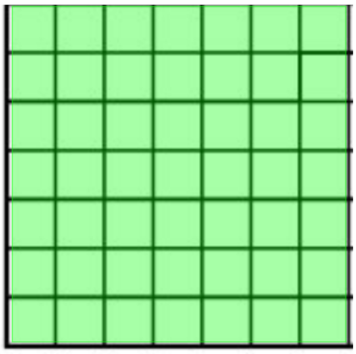
WARM UP



Without Calculators

i) Determine the Area of the Shaded Squares
ii) Determine the perimeter

a)



Area = (base)^2

Area = 7^2

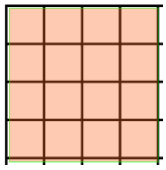
Area = 49 units^2

Perimeter = side + side + side + side

= 7 + 7 + 7 + 7

= 28 units

b)



Area = (base)^2

Area = 4^2

Area = 16 units^2

Perimeter = side + side + side + side

= 4 + 4 + 4 + 4

= 16 units

Find the square root of the following:

a) $\frac{1}{144}$

$\sqrt{\frac{1}{144}}$

$= \frac{1}{12}$

b) $\frac{121}{81}$

$\sqrt{\frac{121}{81}}$

$= \frac{11}{9}$

c) 36

$\sqrt{36}$

$= 6$

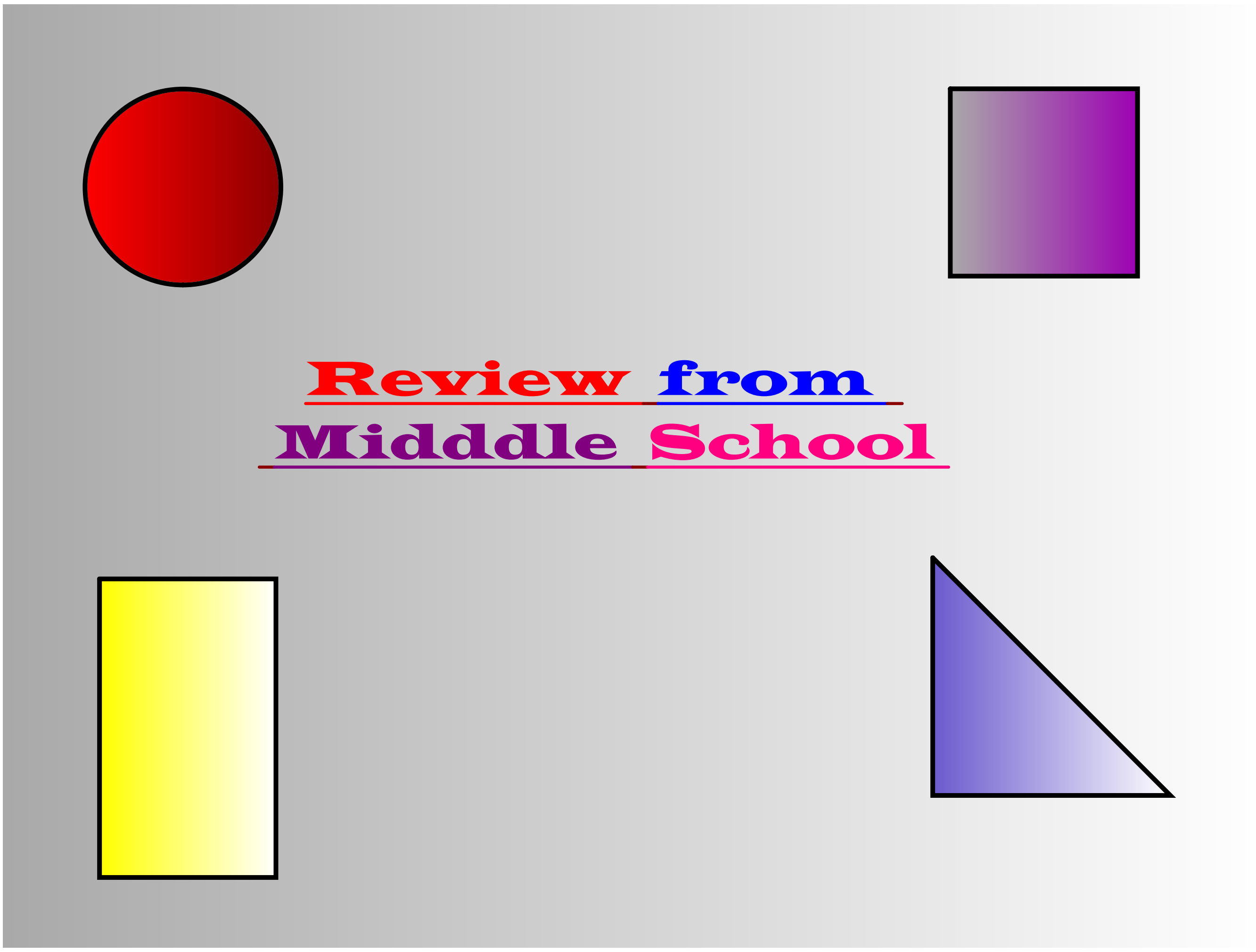
Calculate the number whose square root is $\frac{4}{7}$

$$\sqrt{X} = \frac{4}{7}$$

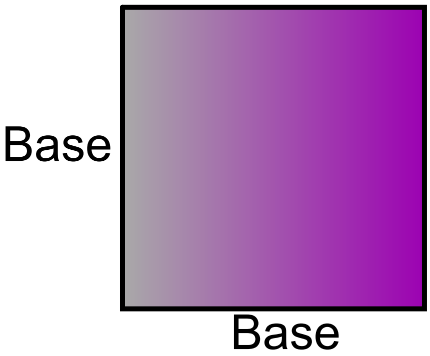
$$\left(\frac{4}{7}\right)^2 = \frac{4}{7} \times \frac{4}{7}$$

$$= \frac{16}{49}$$

So $\frac{4}{7}$ is the square root of $\frac{16}{49}$


Review from
Midddle School

Area of a Square

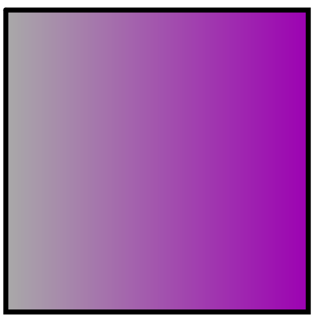


Area = Base x Height

since base = height

Area = $(\text{Base})^2$

Perimeter of a Square

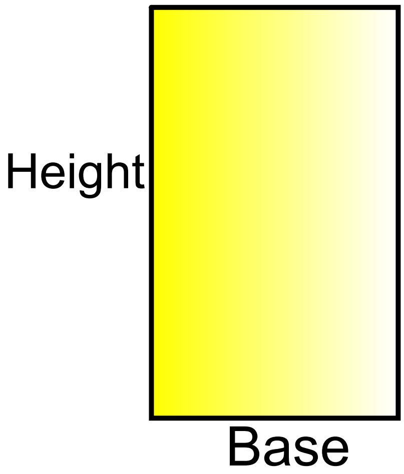


Perimeter = side + side + side + side

or

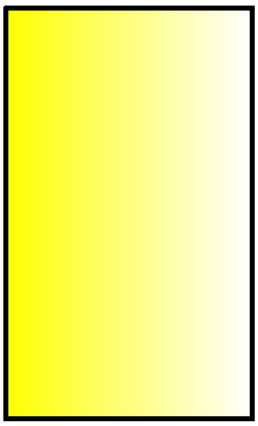
Perimeter = 4 x (Side)

Area of a Rectangle



Area = Base x Height

Perimeter of a Rectangle

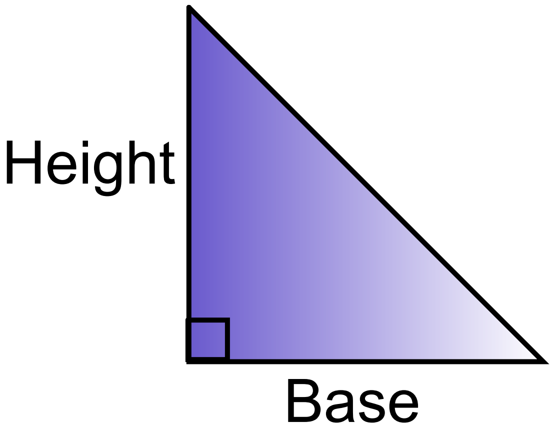


Perimeter = side + side + side + side

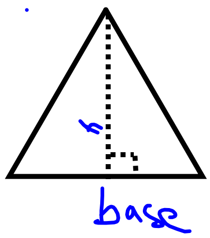
or

Perimeter = 2(Length) + 2(Height)

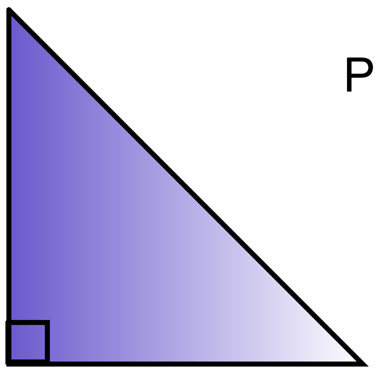
Area of a Triangle



$$\text{Area} = \frac{\text{base x height}}{2}$$

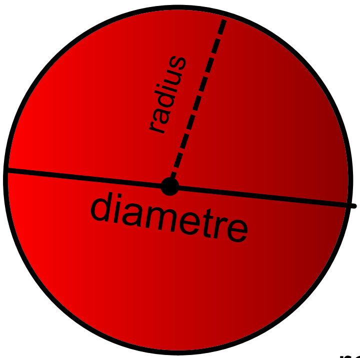


Perimeter of a Triangle



Perimeter = side + side + side

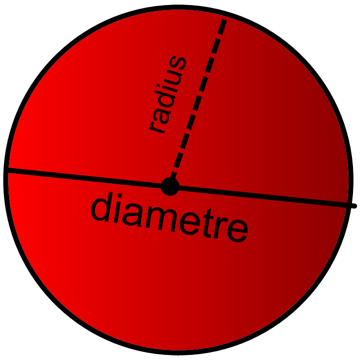
Area of a Circle



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

remember
$\pi = 3.14$

Circumference of a Circle



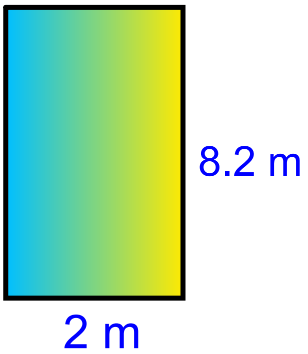
$$C = 2\pi r$$

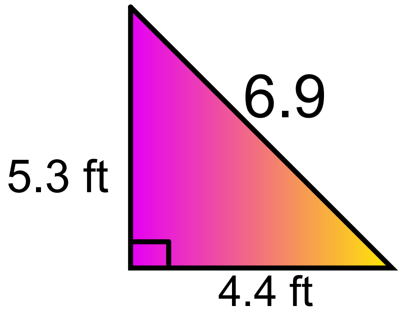
or

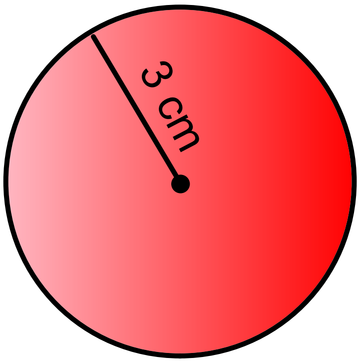
$$C = \pi d$$

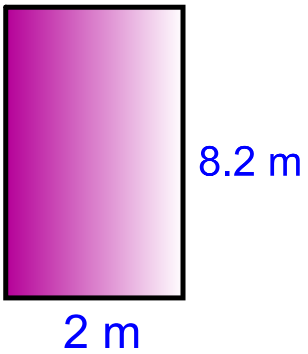
$d = 2r$

Find the area and distance around the shape for all (show formulas)



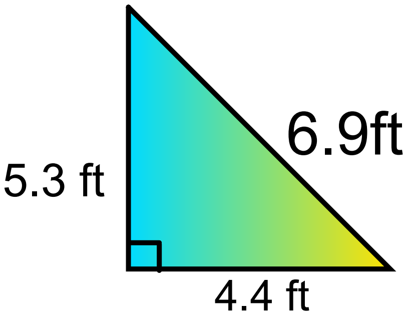






$$P = 2l + 2w$$
$$P = 2(8.2) + 2(2)$$
$$P = 16.4 + 4$$
$$P = 20.4\ m$$

$$A = b \times h$$
$$A = 2 \times 8.2$$
$$A = 16.4\ m^2$$



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

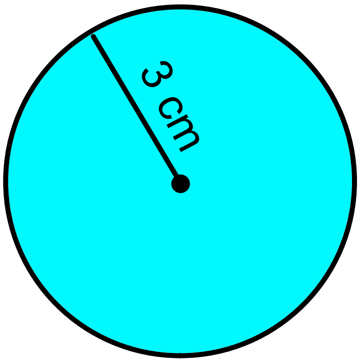
$$= \frac{(4.4)(5.3)}{2}$$

$$= \boxed{11.6\ ft^2}$$

$P = s + s + s$

$P = 5.3 + 4.4 + 6.9$

$P = 16.6\ ft$



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

$$\text{Area} = (3.14) \times 3^2$$

$$\text{Area} = (3.14) \times 9$$

$$\text{Area} = 28.26 \text{ cm}^2$$

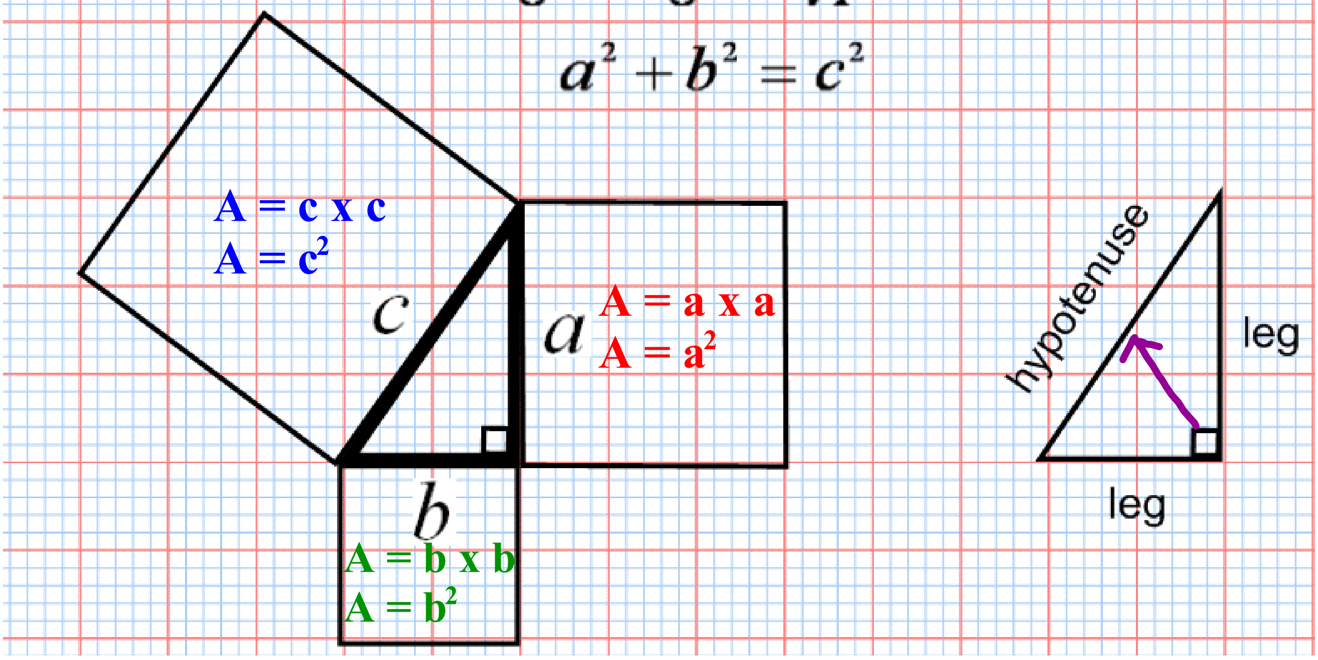
$$C = 2 \pi r$$

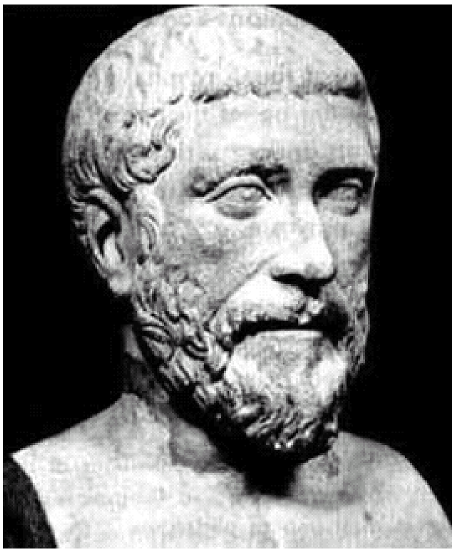
$$C = 2 \times (3.14) \times (3)$$

$$C = 18.84 \text{ cm}$$

Pythagoras found out that when you have a right triangle, $leg^2 + leg^2 = hypotenuse^2$

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

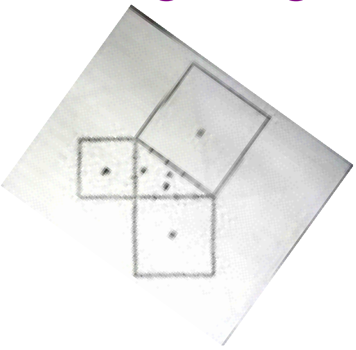


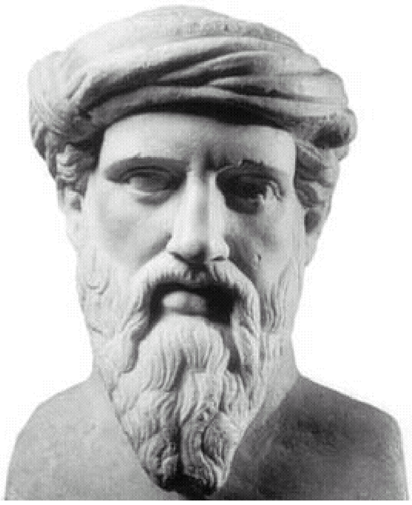


Pythagoras
(about 569 BC - about 475 BC)

Pythagoras was a Greek philosopher who made important developments in mathematics, astronomy and the theory of music. The theorem now known as Pythagoras' theorem was known to the Babylonians 1000 years earlier, but he may have been the first to prove it.

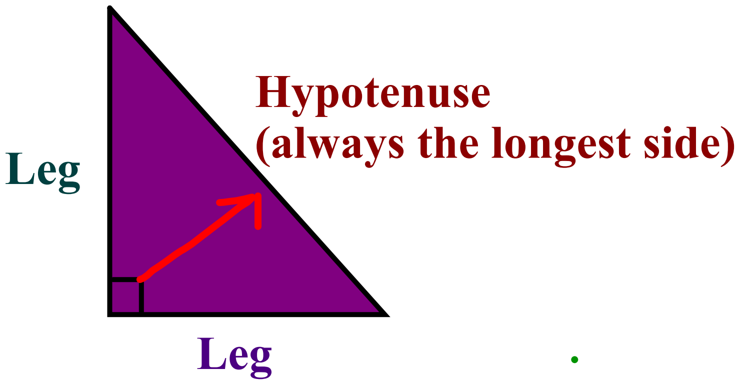
Pythagoras discovered a relationship between the areas of the squares drawn on the sides of a right-angled triangle.

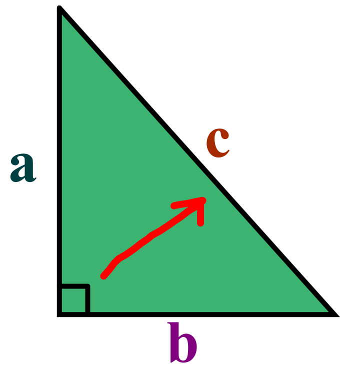




PYTHAGOREAN THEOREM:

We know that a right triangle is a triangle containing a 90° angle.





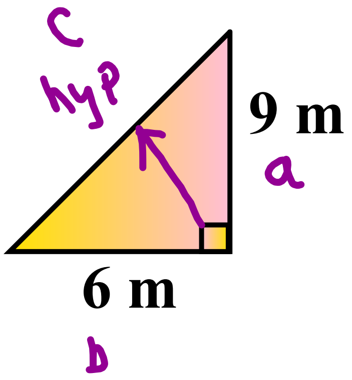
Hypotenuse

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

Leg

$$b^2 = c^2 - a^2$$

How could you check if the ladder is safe? Try to do this without a calculator.



Hypotenuse

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

$$c^2 = 9^2 + 6^2$$

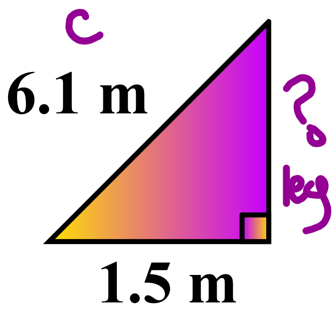
$$c^2 = 81 + 36$$

$$c^2 = 117$$

$$\sqrt{c^2} = \sqrt{117}$$

$$c \doteq 10.8 \text{ m}$$

Calculate how far up a wall a 6.1 m long ladder will reach if its base is 1.5 m from the wall.



Leg

$b^2 = c^2 - a^2$

$b^2 = 6.1^2 - 1.5^2$

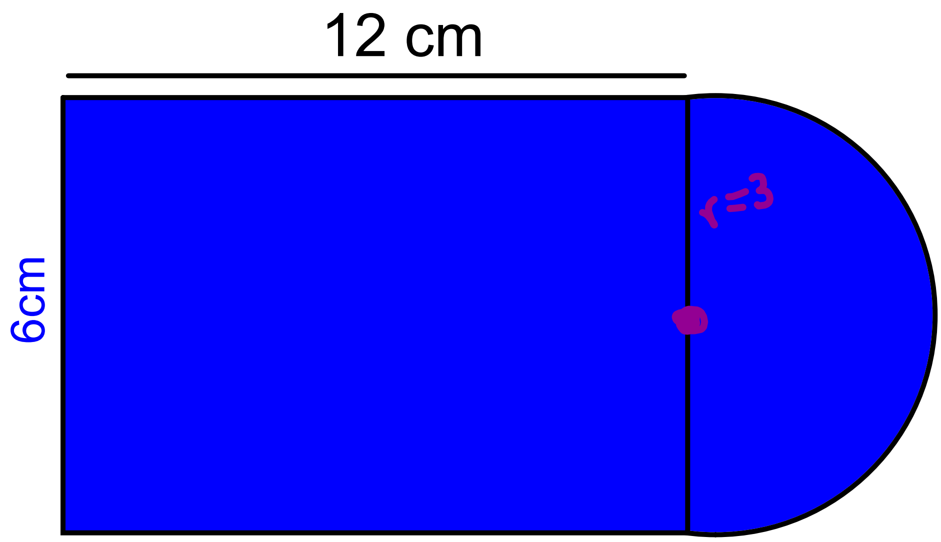
$b^2 = 37.21 - 2.25$

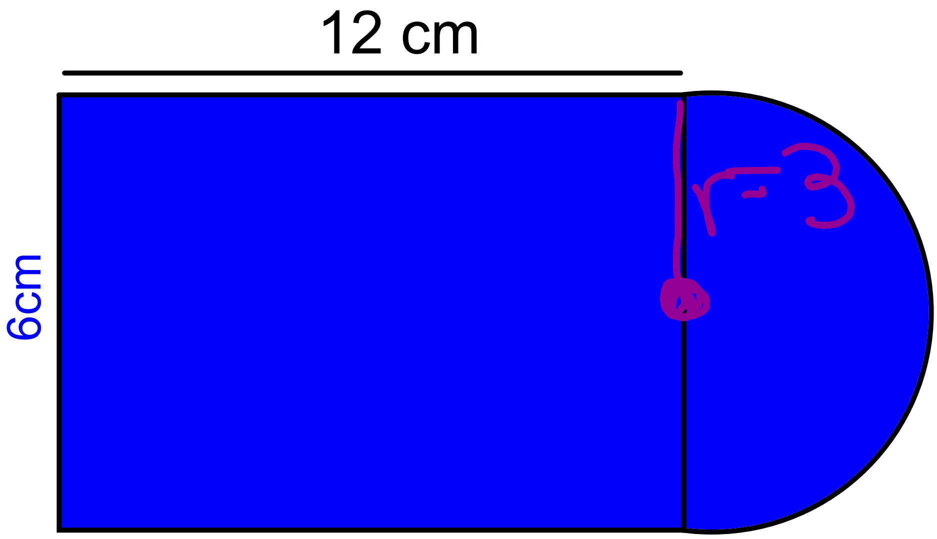
$b^2 = 34.96$

$\sqrt{b^2} = \sqrt{34.96}$

$b \doteq 5.9$ m

Calculate area of the blue shape:





$A = b \times h$

$A = 6 \times 12$

$A = 72\,cm^2$

$A = \frac{\pi r^2}{2}$

$A = \frac{3.14(3)^2}{2}$

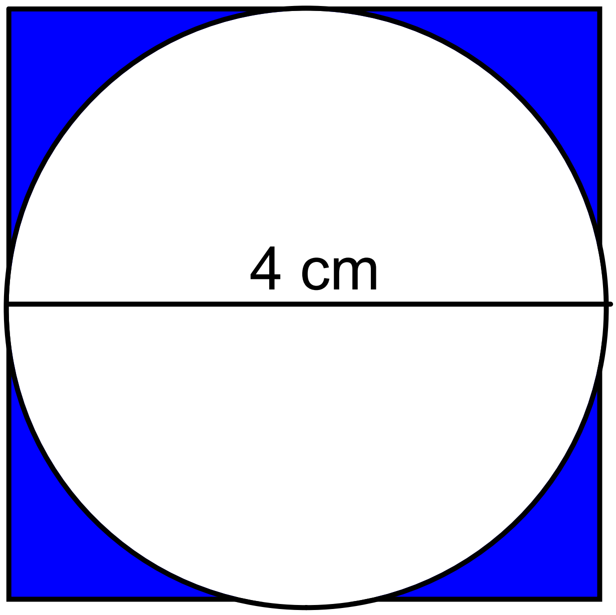
$A = \frac{3.14(9)}{2}$

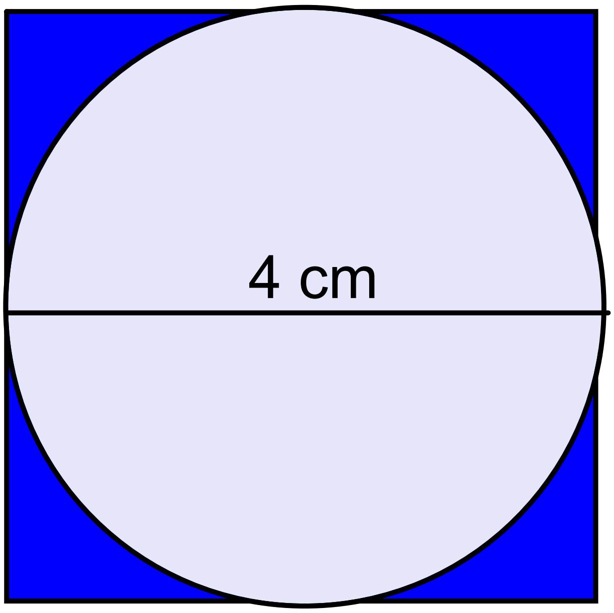
$A = 14.13\,cm^2$

$T_{SA} = 72 + 14.13$

$= 86.13\,cm^2$

Calculate area of the blue shape:





$A = b \times h$

$A = 4 \times 4$

$A = 16 cm^2$

$A = \pi r^2$

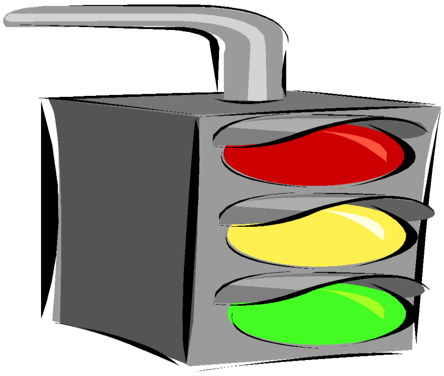
$A = \pi (2)^2$

$A = \pi (4)$

$A = 12.56 cm^2$

$TSA = 16 - 12.56 cm^2$

$= 3.44 cm^2$



Now it is time for Home Learning