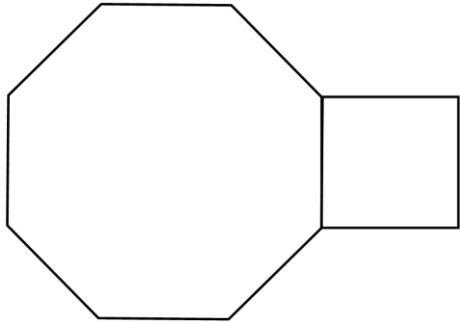


CARD 1

The regular octagon has an area of 600 cm^2 .
Calculate the area of the square. Answer correct to 1 decimal place

**HIGHER RELAY****CARD 2**

A clock shows the time 4:40. If the hands of the clock are 12 cm and 7 cm calculate the distance between the tips of hands.

(1 d.p)

HIGHER RELAY**CARD 3**

An alloy is made by mixing metals A, B and C in the ratio 2 : 3 : 5 respectively.

1 kg of A costs £32.00

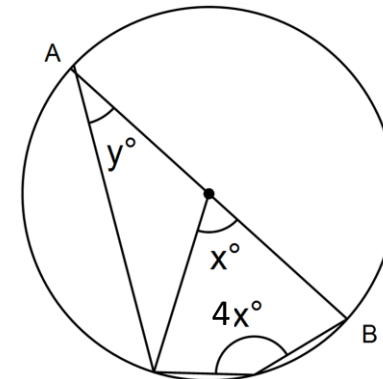
1 kg of B costs £18.00

1 kg of C costs £15.00

How much would it cost to make 500 g of the alloy?

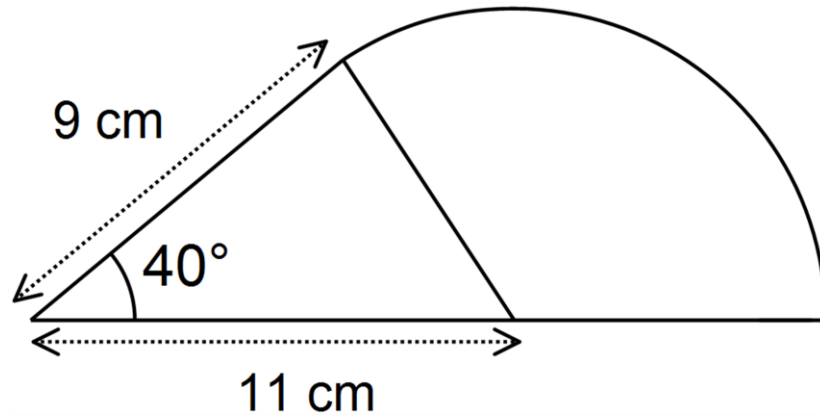
HIGHER RELAY**CARD 4**

AB is the diameter of the circle .
Calculate angles x and y

**HIGHER RELAY**

CARD 5

Calculate the perimeter correct to 1 decimal place

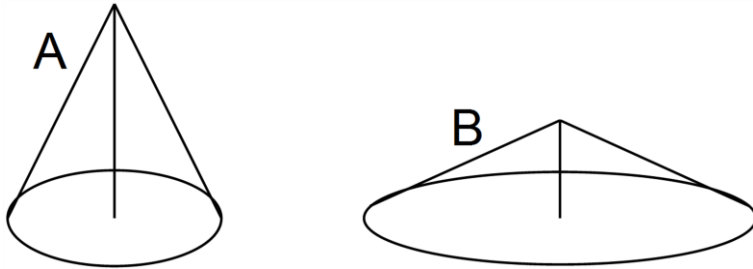
**HIGHER RELAY****CARD 6**

Molly has a jar of silver coins. One third of the coins are 5p and 10 p coins. The ratio of 5p to 10p coins is 2 : 3. The 5 and 10p coins are worth £2.40.

40% of the coins are 20p coins and the rest are 50p coins. How many of each type of coin are there and what is the total value?

HIGHER RELAY**CARD 7**

Cone A has a radius of 10 cm and vertical height 15 cm. Cone A is transformed into cone B by doubling the radius and halving the height. Calculate the percentage change in total surface area.

**HIGHER RELAY****CARD 8**

y varies inversely as the square root of x
 x varies as the square of a .

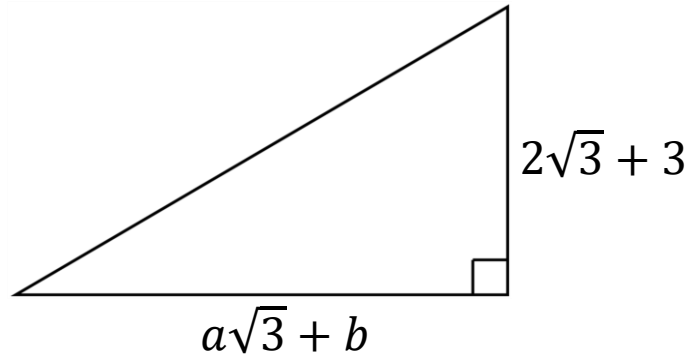
When $y = 20$, $x = 25$ and when $x = \frac{1}{2}$ $a = \frac{1}{2}$

Find the value of y in terms of r when $a^2 = 50r^6$

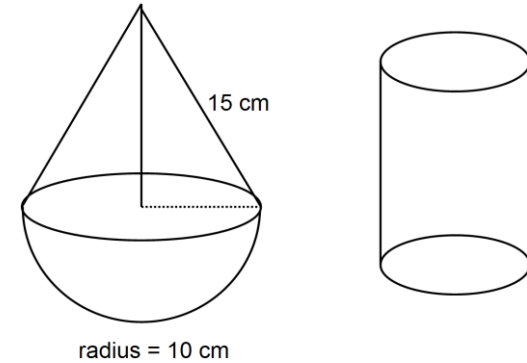
HIGHER RELAY

CARD 9

If the area of the triangle is $\frac{\sqrt{3}}{2}$ find the value of a and b

**HIGHER RELAY****CARD 10**

The two solids have the same surface area. The ratio of the radius of the cylinder to the height of the cylinder is 1 : 3. Calculate the height of the cylinder. (2 d.p.)

**HIGHER RELAY****CARD 11**

Eve and Jace were each given £5000 on their 18th birthday. Eve invested all of her money in an account for 2 years earning 2.5% interest per annum.

Jace went into business and spent £4950 on 33 tablets. Over the next two years he sold two thirds of the tablets making a profit of 20% on each and sold the remainder making a 4% loss on each. Calculate the difference in how much money Eve and Jace have at the end of the 2 years.

HIGHER RELAY**CARD 12**

A, B and C are three mathematically similar solids

A has a height of 4 cm and a volume of 20 cm³

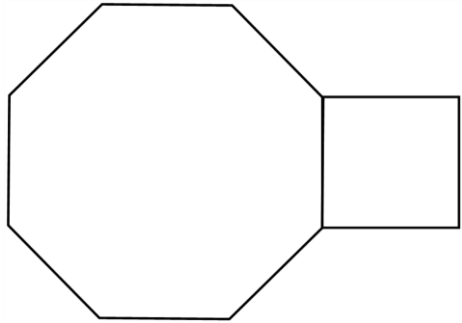
B has a volume of 160 cm³ and a surface area of 100 cm²

If C has a surface area of 900 cm² calculate the difference in heights of solids B and C

HIGHER RELAY

CARD 1

The regular octagon has an area of 600 cm^2 .
 Calculate the area of the square. Answer correct to 1 decimal place **124.3 cm^2**

**HIGHER RELAY****CARD 2**

A clock shows the time 4:40. If the hands of the clock are 12 cm and 7 cm calculate the distance between the tips of hands.

 14.9 cm **HIGHER RELAY****CARD 3**

An alloy is made by mixing metals A, B and C in the ratio 2 : 3 : 5 respectively.

1 kg of A costs £32.00

1 kg of B costs £18.00

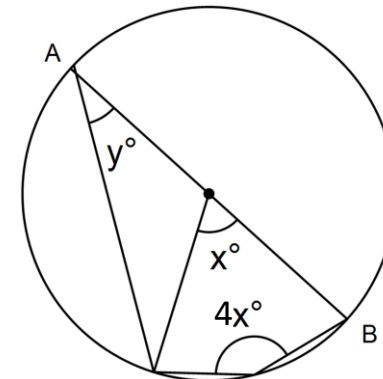
1 kg of C costs £15.00

How much would it cost to make 500 g of the alloy? **£9.65**

HIGHER RELAY**CARD 4**

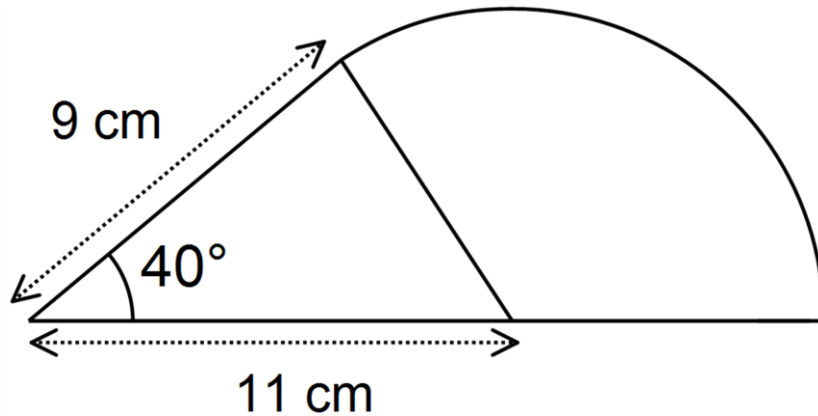
AB is the diameter of the circle .

Calculate angles x and y **$x = 40^\circ$ $y = 20^\circ$**

**HIGHER RELAY**

CARD 5

Calculate the perimeter correct to 1 decimal place **42.6 cm**

**HIGHER RELAY****CARD 6**

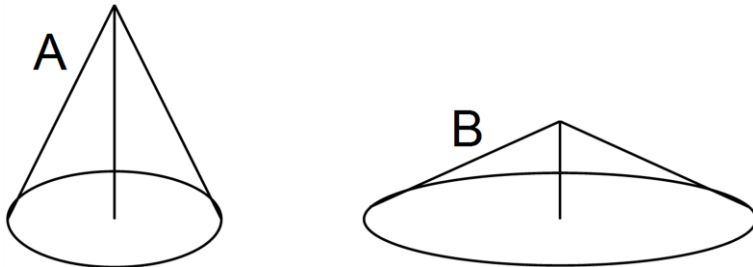
Molly has a jar of silver coins. One third of the coins are 5p and 10 p coins. The ratio of 5p to 10p coins is 2 : 3. The 5 and 10p coins are worth £2.40.

40% of the coins are 20p coins and the rest are 50p coins. How many of each type of coin are there and what is the total value?

12×5p 18×10p 36×20p 24×50p
£21.60

HIGHER RELAY**CARD 7**

Cone A has a radius of 10 cm and vertical height 15 cm. Cone A is transformed into cone B by doubling the radius and halving the height. Calculate the percentage change in total surface area. **195%**

**HIGHER RELAY****CARD 8**

y varies inversely as the square root of x
x varies as the square of a.

When $y = 20$, $x = 25$ and when $x = \frac{1}{2}$ $a = \frac{1}{2}$

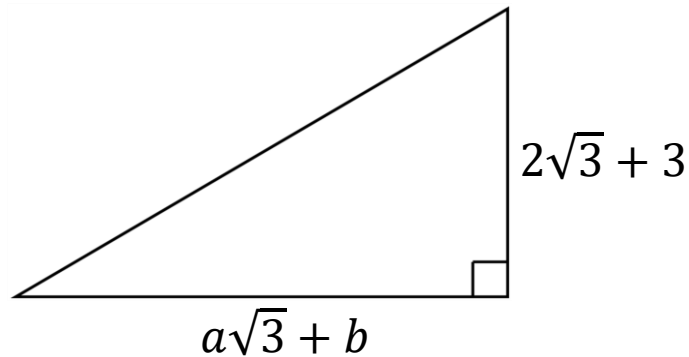
Find the value of y in terms of r when $a^2 = 50r^3$

$$y = \frac{10}{r^3}$$

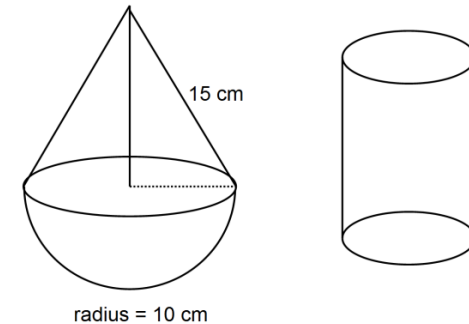
HIGHER RELAY

CARD 9

If the area of the triangle is $\frac{\sqrt{3}}{2}$ find the value of a and b **a = -1 b = 2**

**HIGHER RELAY****CARD 10**

The two solids have the same surface area. The ratio of the radius of the cylinder to the height of the cylinder is 1 : 3. Calculate the height of the cylinder (2 d.p.)

19.84 cm**HIGHER RELAY****CARD 11**

Eve and Jace were each given £5000 on their 18th birthday. Eve invested all of her money in an account for 2 years earning 2.5% interest per annum.

Jace went into business and spent £4950 on 33 tablets. Over the next two years he sold two thirds of the tablets making a profit of 20% on each and sold the remainder making a 4% loss on each. Calculate the difference in how much money Eve and Jace have at the end of the 2 years.

£290.88**HIGHER RELAY****CARD 12**

A, B and C are three mathematically similar solids

A has a height of 4 cm and a volume of 20 cm³

B has a volume of 160 cm³ and a surface area of 100 cm²

If C has a surface area of 900 cm² calculate the difference in heights of solids B and C

16 cm**HIGHER RELAY**