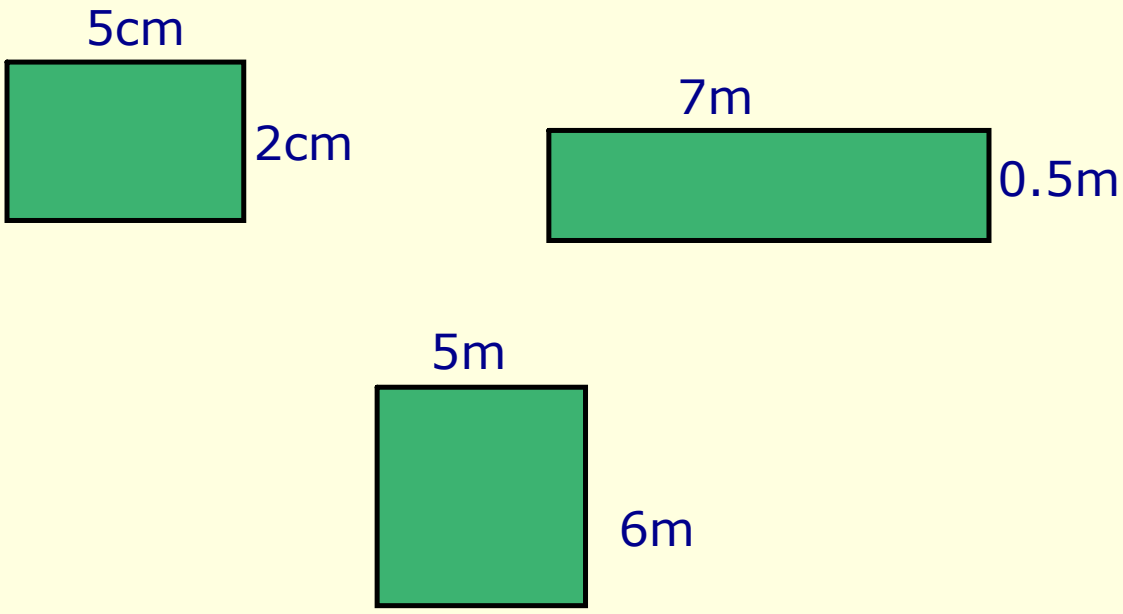
Area

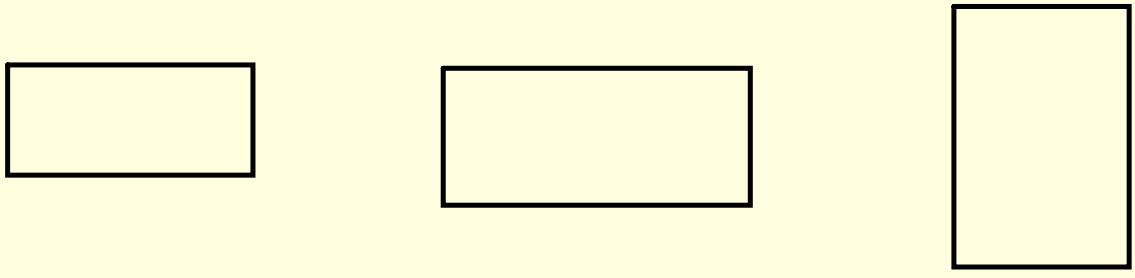
area

Area of rectangles and compound shapes

Find the area of each shape

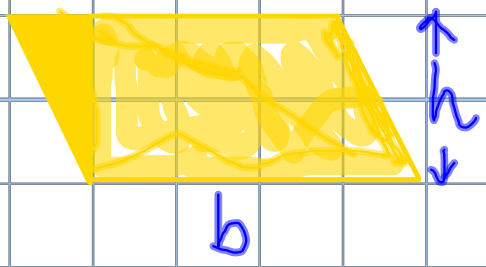


Draw 3 rectangles with area 30cm^2.



Area of Parallelograms

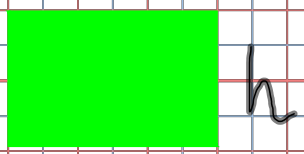
gsp

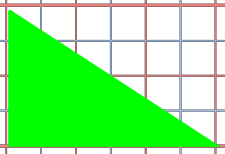


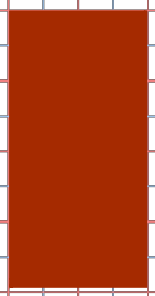
Area of a parallelogram =

Page 74 A2-A12 evens only

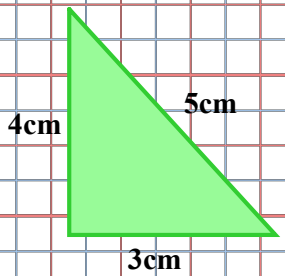
Area of Triangles







Area of a triangle =



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Compound shapes

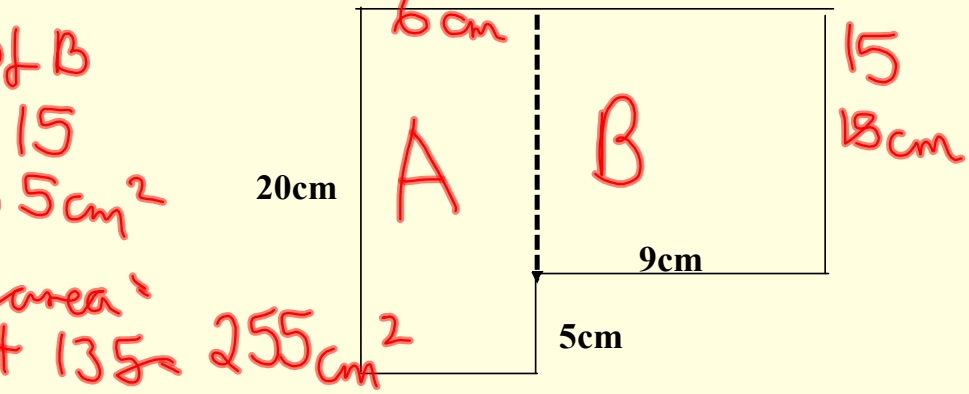
millie and douglas fighting over area

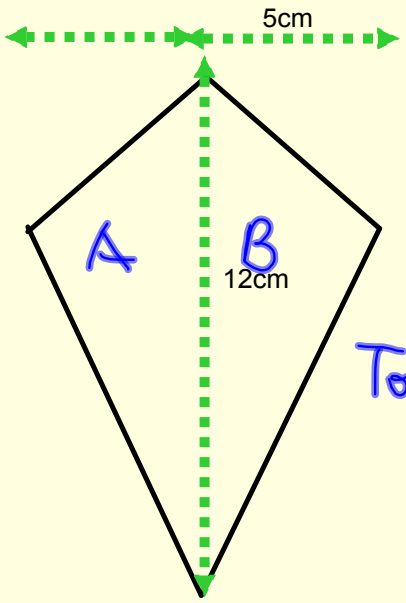
Compound shapes are made up of more than one shape.

Area of A: 6×20: 120cm²

Area of B
= 9×15
= 135cm²

Total area:
120 + 135 = 255cm²



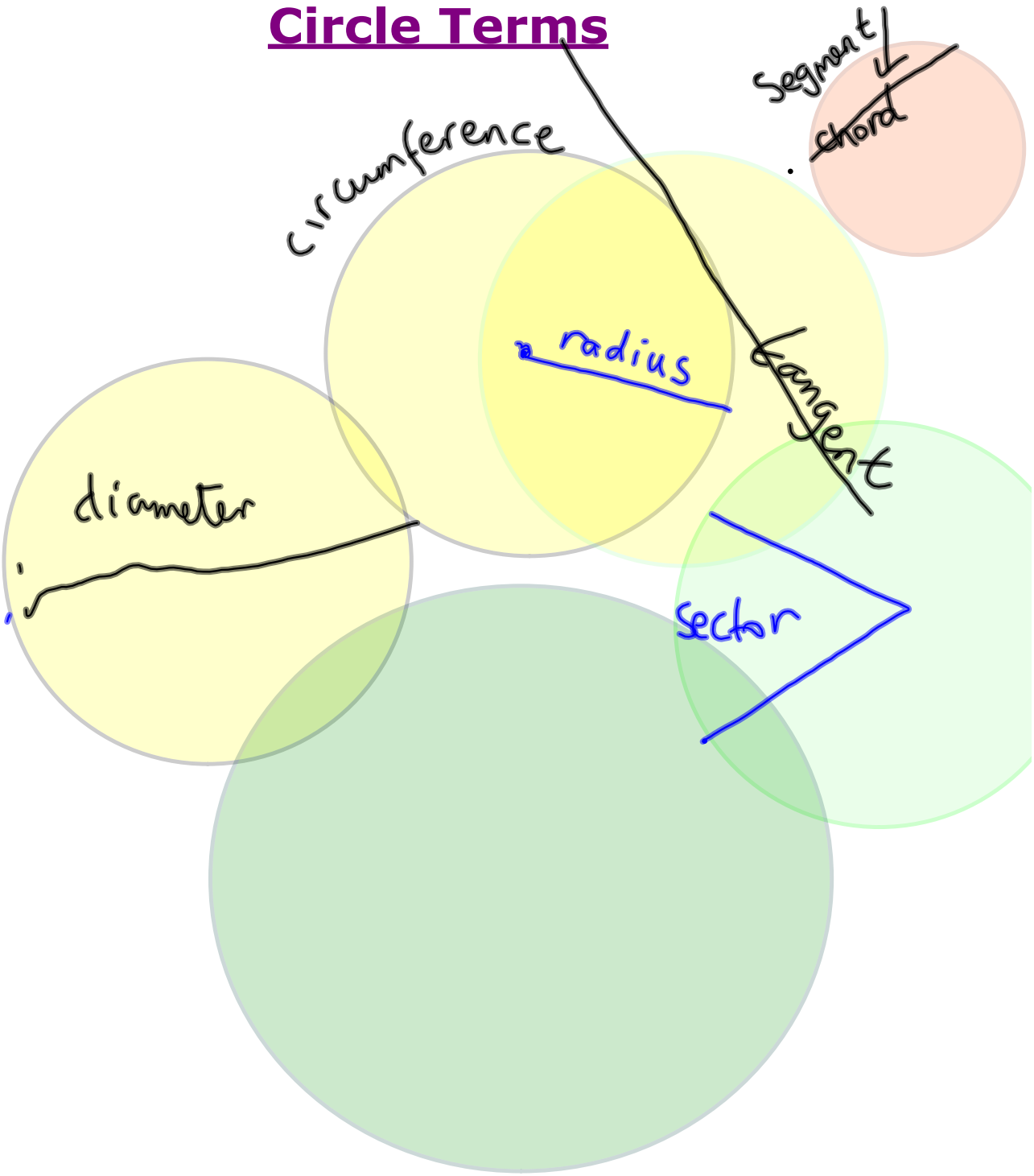


Area of A = $\frac{1}{2}$ × 5 × 12

Total = 2 × ($\frac{1}{2}$ × 5 × 12)

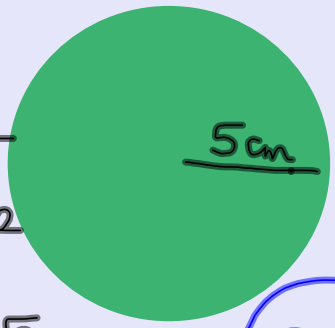
= 60cm²

Circle Terms



Circles

Area of a circle = πr^2



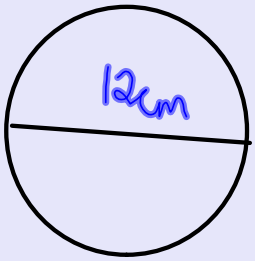
$= \pi \times 5^2$

$= \pi \times 25$

$= 78.5\text{cm}^2$

P 82
D1

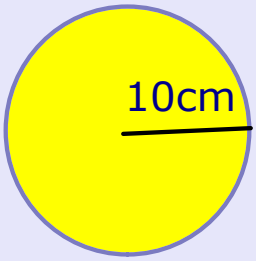
Area of a semicircle= $\frac{1}{2}\pi r^2$

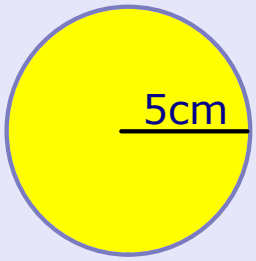


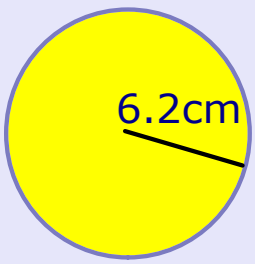
$= \frac{1}{2} \times \pi \times 6^2$

$= 56.5\text{cm}^2$

Perimeter of a semicircle=

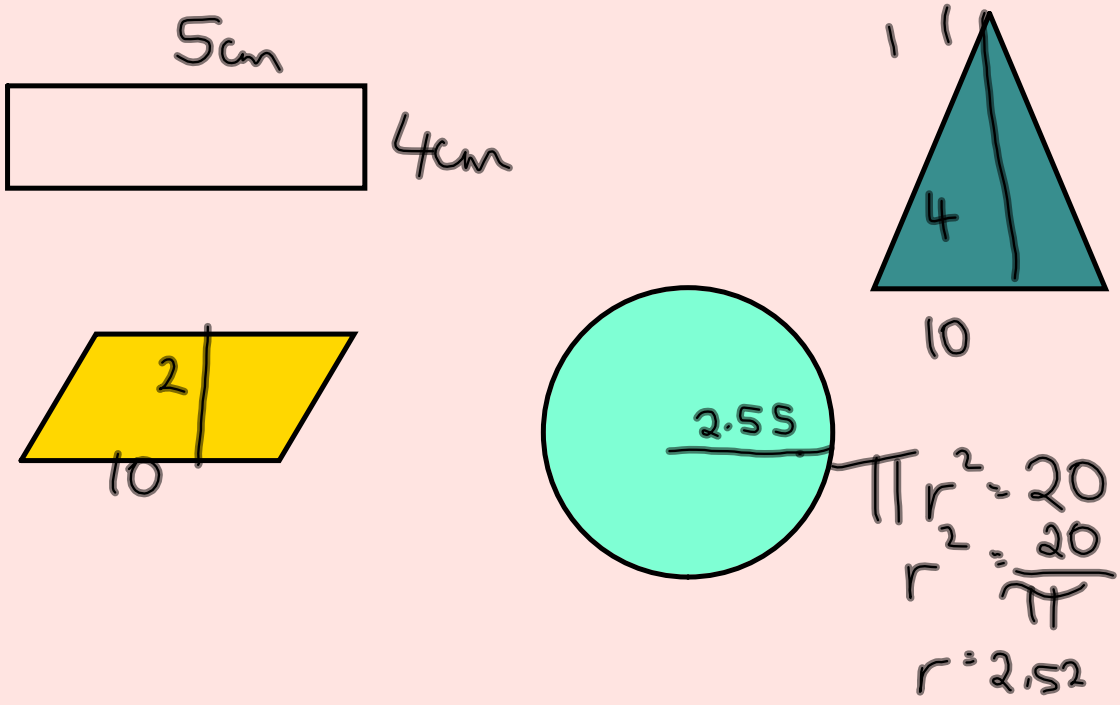






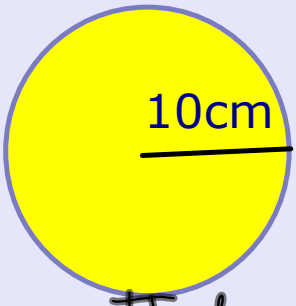
Page 82: D1,3, 5, 6, 8, 9

Draw a rectangle, triangle, parallelogram and circle with area $20cm^2$

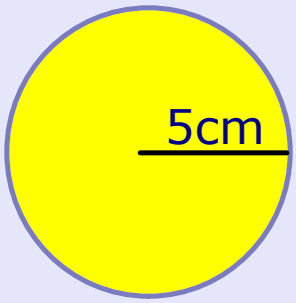


Circumference of circles

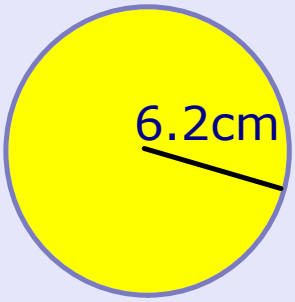
Circumference of a circle= πd



$C = \pi d$
$C = \pi \times 20$
$C = 62.8\text{cm}$



$C = \pi d$
$C = \pi \times 10$
$C = 31.4\text{cm}$

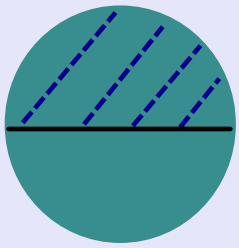


$C = \pi d$
$C = \pi \times 12.4$
$C = 38.9\text{cm}$
39.0cm

Page 82: D1,3, 5, 6, 8, 9

Areas of sectors of a circle

Find the area of the semi-circles



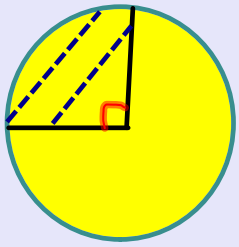
1) r= 5cm $A = \frac{1}{2}\pi r^2 = \frac{1}{2}\pi \times 25$

2) r = 6cm $A = \frac{1}{2} \times \pi \times 36 = 56.5\text{cm}^2$ $= 39.3\text{cm}^2$

3) d = 4cm

$A = \frac{1}{2}\pi \times 2^2 = \frac{1}{2} \times \pi \times 4 = 6.3\text{cm}^2$

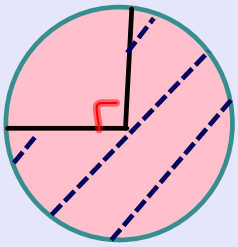
Find the area of the shaded section:



$A = 78.5\text{cm}^2$

r = 10cm

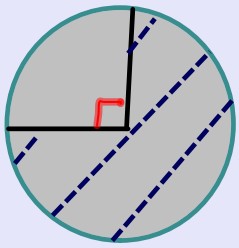
$A = \frac{\pi r^2}{4} = \frac{\pi \times 10^2}{4}$



$A = 150.8\text{cm}^2$

r= 8cm

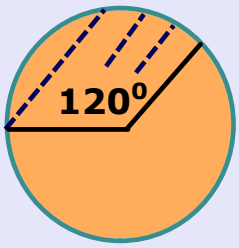
$A = \frac{3\pi r^2}{4} = \frac{3 \times \pi \times 8^2}{4}$



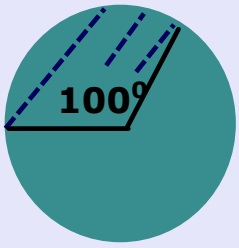
$A = 58.9\text{cm}^2$

d= 10cm

$A = \frac{3}{4} \times \pi r^2 = \frac{3 \times \pi \times 5^2}{4}$



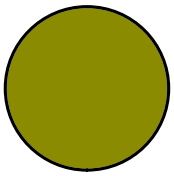
r = 20cm



r = 4cm

Tweedledum and tweedledee
round the circle pi x d
If its area they declared
You must use pi r squared

Finding the radius given Area or circumference

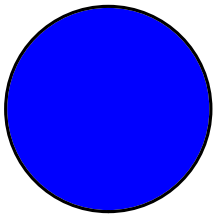


C= 30cm
Find the radius

$\pi \times d = 30$

$d = \frac{30}{\pi} = 9.54$

$r = 4.8cm$



Area = $40cm^2$
Find r

$\pi r^2 = 40$

$r^2 = \frac{40}{\pi} = 12.7$

$r = 3.6cm$

A circle has circumference 35cm.
Find its area.

$\pi d = 35$

$d = \frac{35}{\pi} = 11.1$

$r = 5.6$

$A = \pi r^2$

$= \pi \times 5.6^2$

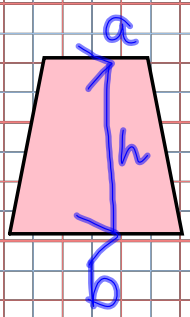
$= 98.5 cm^2$

E5) $\pi r^2 = 200$

$r^2 = \frac{200}{\pi} = 63.6....$

$(r = 7.9)$, 8.0m

Area of a trapezium



Area $= \frac{1}{2}(a+b)h$

$= \frac{h}{2}(a+b)$

$\frac{(a+b)h}{2}$

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worksheet on assorted areas

1. b) $A = \frac{h}{2}(a+b)$

$= \frac{7}{2}(4+6)$

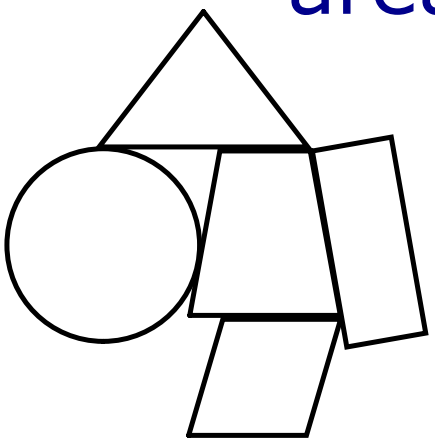
$= \frac{7}{2}(10) = 35\ cm^2$

e) $A = \frac{1}{2}(a+b)h$

$= \frac{1}{2}(8.4+5.1)7.5$

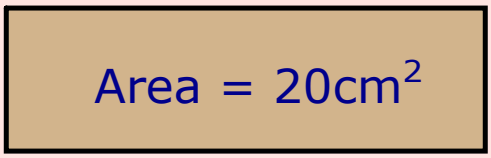
$= \frac{1}{2} \times 13.5 \times 7.5 = 50.625\ cm^2$

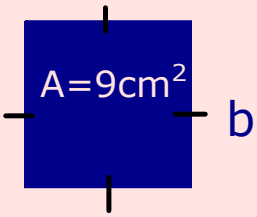
Make a trapezium, circle, triangle, parallelogram and rectangle each with area 36cm^2.

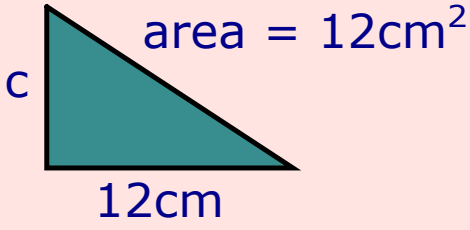


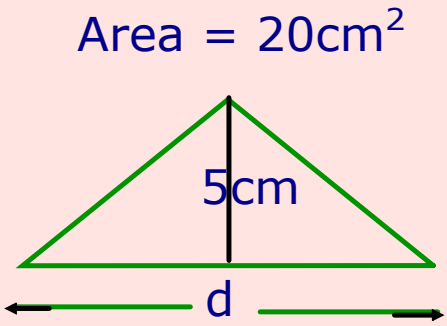
Each of these shapes has a missing dimension.

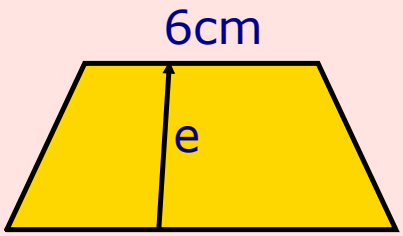
Try to find it:



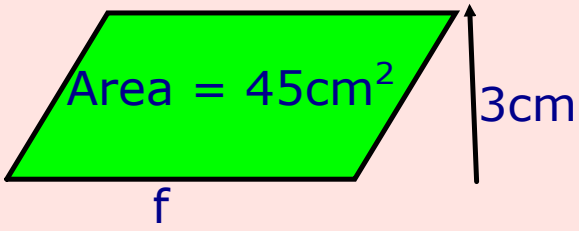


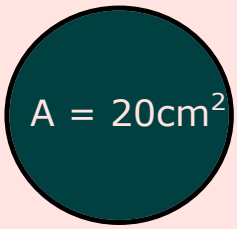






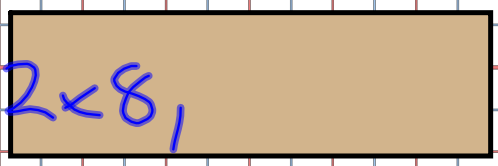
Area = 32cm²



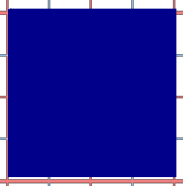


Find the radius!

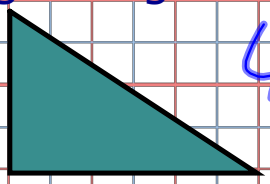
Draw, with area 16cm^2:

a rectangle 

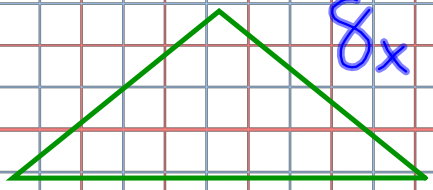
(doesn't have to be scale) (easy)

a square: 

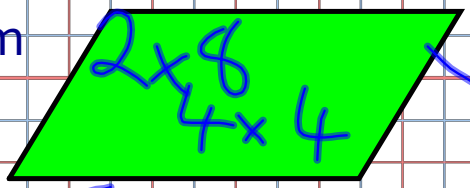
(easyish)

a right angled triangle: 

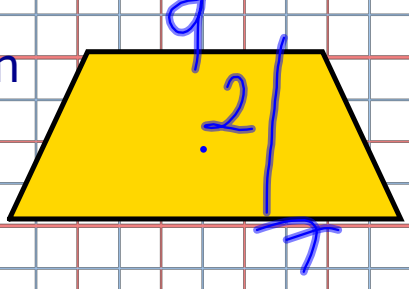
(might stretch you)

a non-right angled triangle: 

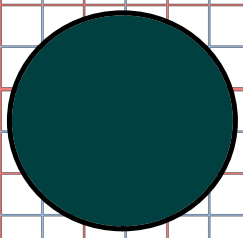
(easy if you don't panic)

a parallelogram 

(easy if you can remember the formula)

a trapezium 

(should keep you busy for a few minutes)

a circle 
(this will activate your grey cells)

Volume

The space inside a 3D shape

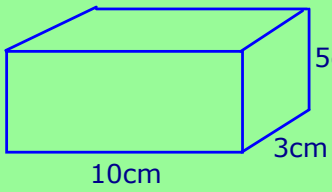
volume

$V = w \times d \times h$

$V = x^3$

Vol of prism = area of face × depth

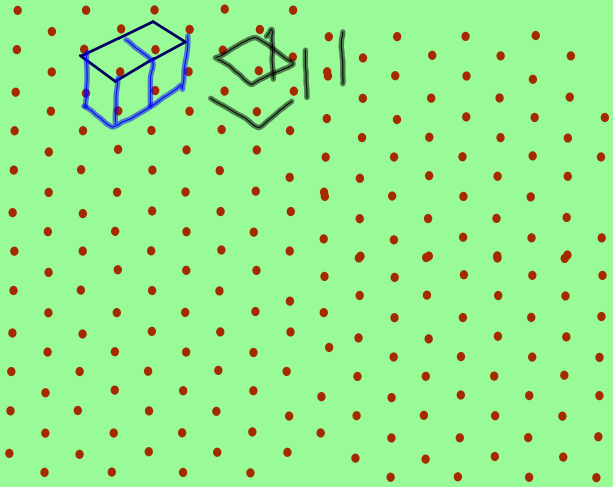
Volume



5×5×6

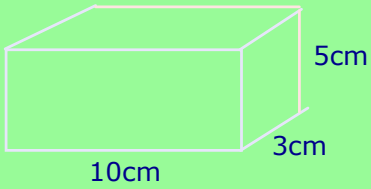
On dotty paper draw 5 cuboids with volume 30cm^3.

Make sure the paper is the right way up!



Make a cuboid with volume 60cm^3.
Extension: Make a triangular prism with volume 60cm^3

Surface Area



Surface area is...

area of A=

area of B=

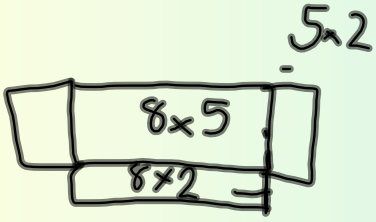
area of C=

Area of A+B+C =

Total area =

Find the surface area of each of your 5 cuboids.

Make a cuboid with volume 80cm^3



$8 \times 5 \times 2$

$5 \times 4 \times 4$

80×1

$4 \times 2 \times 10$

Surface Area of a Cuboid

2x Face A = 2 x 4x4 = 32

2x Face B = 2 x 5x4 = 40

2x Face C = 2 x 4x5 = 40

Total Surface area = 112 cm^2

4x 5x 4

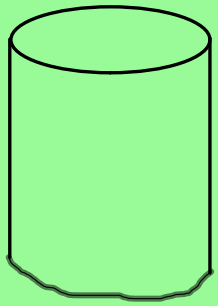
2x5x8
4x10x2

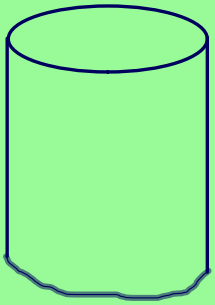
SA = 132 cm^2

SA = 136 cm^2

Volume of cylinders

$V = \pi r^2 h$

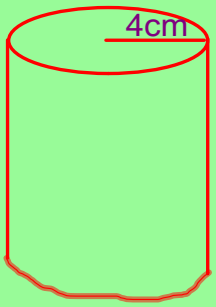




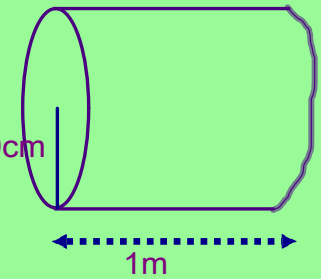
Find the volume of the cylinder

h=10cm
r= 6cm

$V = \pi r^2 h$
$= \pi \times 6^2 \times 10$
$= 1130 cm^3$



Volume = $\pi r^2 h$
$\pi \times 4^2 \times 12$
$= 603.2 cm^3$



Find the volume of the cylinder.

$V = \pi \times 10^2 \times 100$
$= 31415 cm^3$

Volume of a cylinder is $120cm^3$. Find the height if the radius is 2cm.

$V = \pi r^2 h$

$120 = \pi \times 2^2 \times h$

$\frac{120}{\pi \times 4} = h$

$h = 9.5cm$

$120 \div (\pi \times 4)$

$120 \div \pi \div 4$

Volume of a cylinder is $120cm^3$. Find the radius if the height is 2cm.

$V = \pi r^2 h$

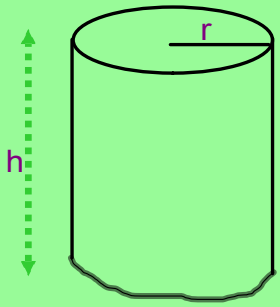
$120 = \pi \times r^2 \times 2$

$\frac{120}{\pi \times 2} = r^2 = 19.1$

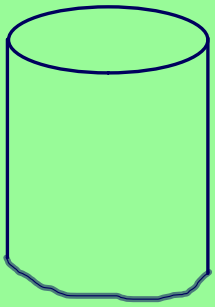
$r = \sqrt{19.1}$

$r = 4.4cm$

Surface area of cylinders

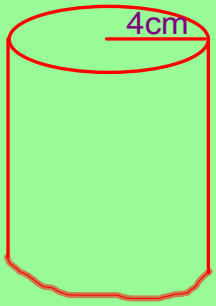


What does the net look like?



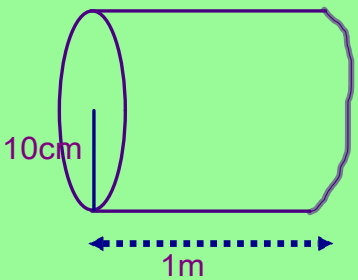
Find the surface area of the cylinder

h=10cm
r= 6cm



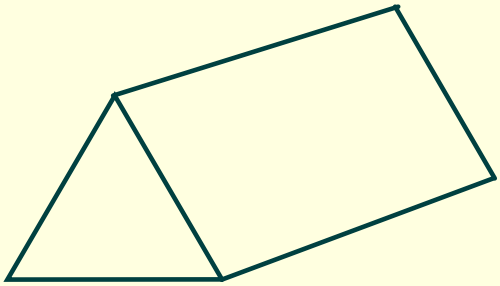
Find the surface area

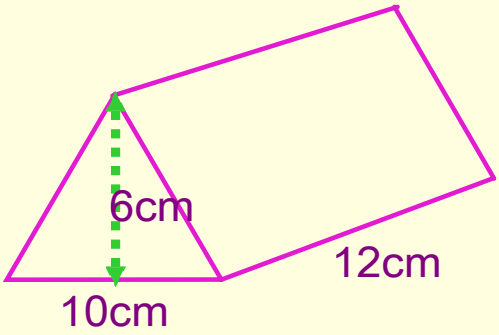
12cm



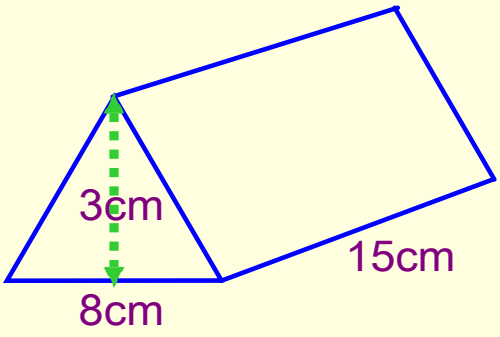
Find the surface area of the cylinder.

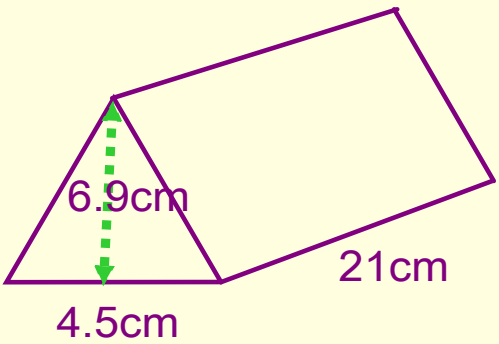
Volume of a Triangular prism



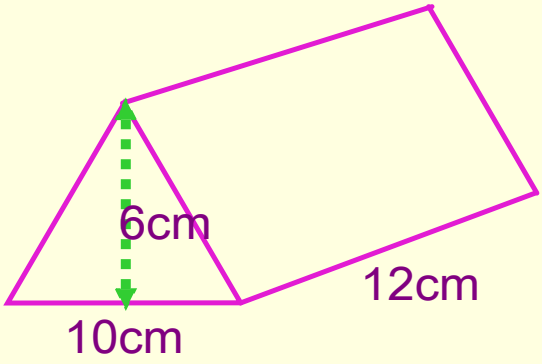


Find the volume of the prism.

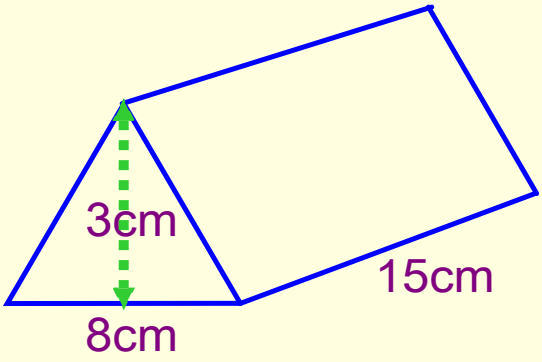


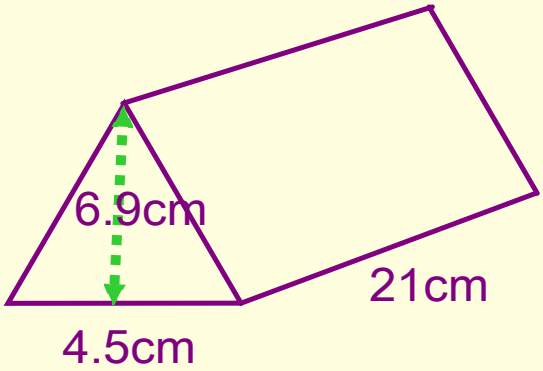


Surface area of a Triangular prism



Find the surface area of the prism.





In your exercise book draw the net of a cube. (E)

In your exercise book draw the net of a cube
3cm x 3cm x 3cm.
Find its volume and surface area.
(D-)

In your exercise book draw the net of a cuboid
3cm x 4cm x 5cm.
Find its volume and surface area.
(D+)

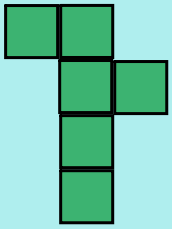
Make the net of a cuboid with volume $40cm^3$.
Find its surface area.
(C)

Make the net of a triangular prism with volume $60cm^3$. Find its surface area. (B-)

Make the net of a cylinder with volume $60cm^3$.
Find its surface area.
(B)

Page 137 B5 onwards

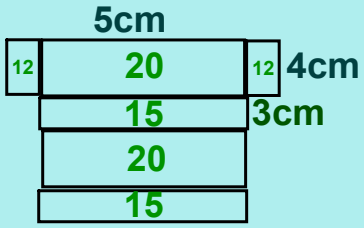
In your exercise book draw the net of a cube. (E)



In your exercise book draw the net of a cube
3cm x 3cm x 3cm.
Find its volume and surface area. (D-)

$V = 3x3x3=27cm^3$
$SA= 9x\ 6 = 54cm^2$

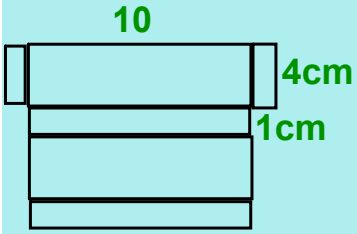
In your exercise book draw the net of a cuboid
3cm x 4cm x 5cm. (D+)
Find its volume and surface area.



$V=3x4x5=60cm^3$

$SA= 94cm^3$

Make the net of a cuboid with volume $40cm^3$.
Find its surface area. (C)

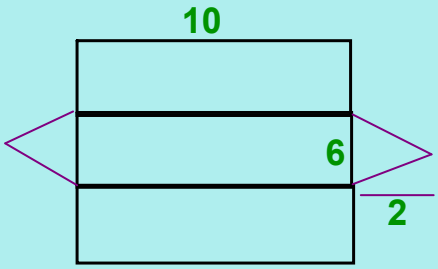


$SA=80+20+8=108cm^2$

10x2x2
$SA=40+40+8=88cm^2$

5x4x2
$SA=40+16+20=76cm^2$

Make the net of a triangular prism with volume $60cm^3$. Find its surface area. (B-)



Make the net of a cylinder with volume $60cm^3$.
Find its surface area. (B)

Draw accurately and to scale, cut out and stick in your book:

A rectangle with area 36cm^2. 

A square with area 36cm^2. 


A parallelogram with area 36cm^2.

A triangle with area 36cm^2. 


A trapezium with area 36cm^2.

A circle with area 36cm^2. 

Make the net of a cylinder.

THINK about:
The dimensions of the circles first, then make a rectangle to fit.

FIND the volume and surface area.

Paste it into your book and write up your results.

EXTENSION:
Make a cylinder with volume 100cm^3.

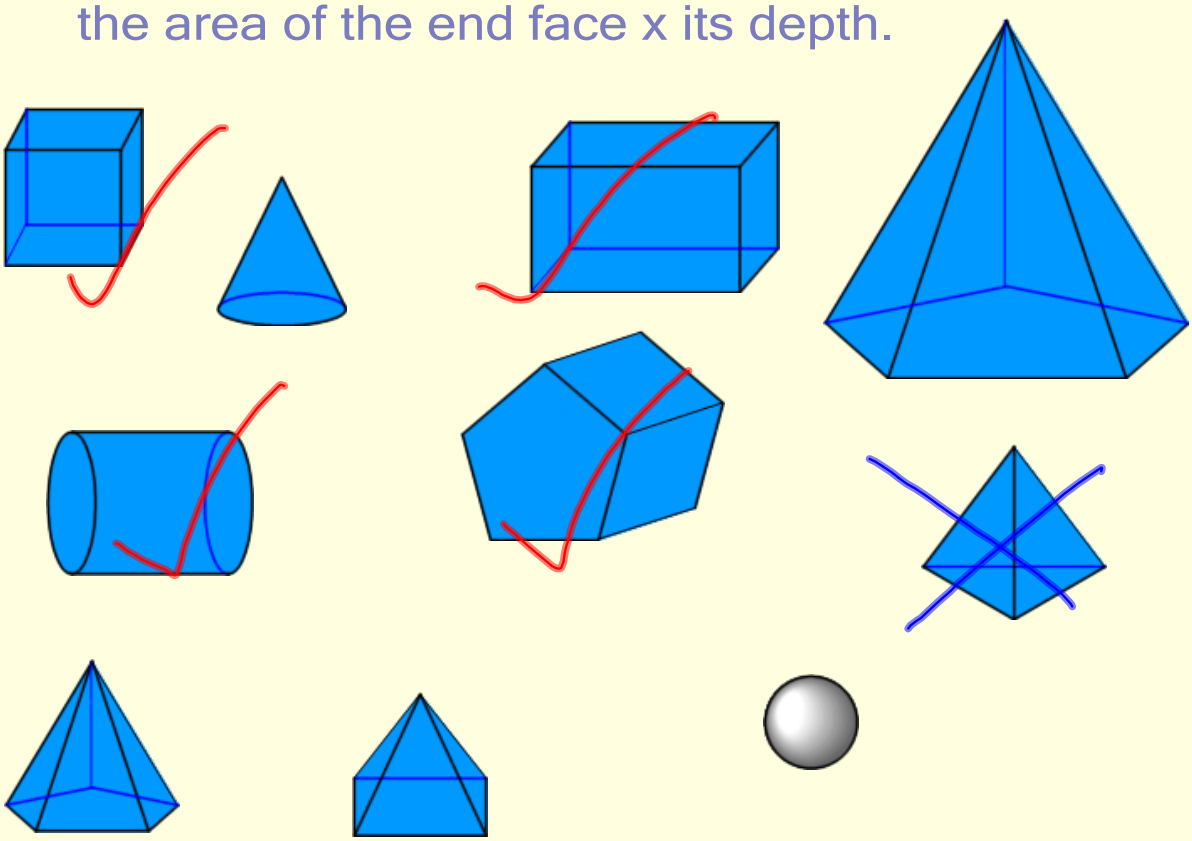
Homework for Tuesday

page 139 C4, C5, C7

page 143 ₵1

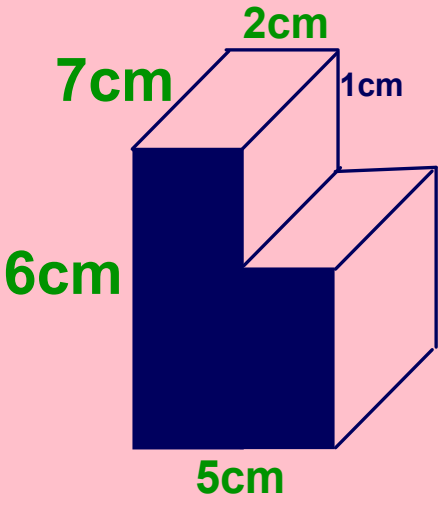
Volume

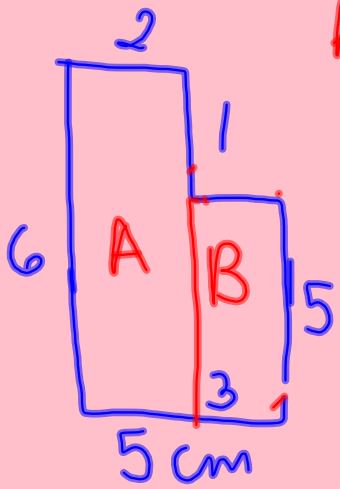
The volume of a prism is
the area of the end face x its depth.



Page 135

Volume of other Prisms





Area of A = 12 cm²

Area of B = 5 × 3
= 15 cm²

A + B = 27 cm²

Vol = 27 × 7 = 189 cm³

page 136

B 3 a)

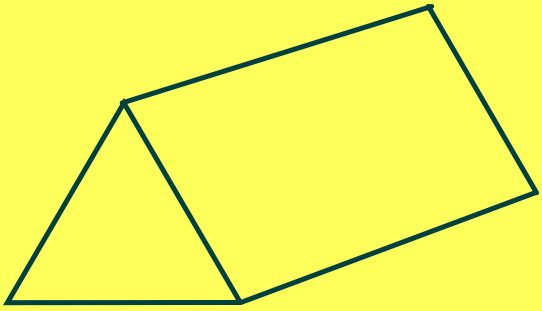
B 4 c)

B 5 →

Extension T3 page 143

Surface area of a Triangular prism

What does the net look like?



- **Make the net of a right-angled triangular prism with volume 60cm^3.**

Or page 140

1m

Area = 2.4m²

2.4cm

2.4m²

0.024

100 × 2.4 = 240cm²

True or false?

2m² = 20000cm²

The number for an area of a rectangle is always greater than the number for the perimeter. For example:

5cm

7cm

A= 35cm²
P=24cm

35>24

3.5 × 5
17.5

2 × 1

P6
A:2

4

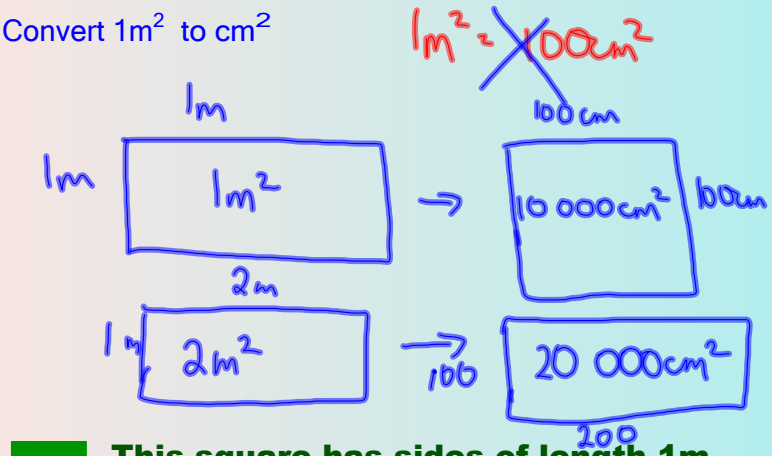
4

A:16
P-16

A Rubiks cube has faces made up of 3 x3 smaller cubes.
There is only one layer of cubes - inside is some clever engineering.
Each face has 9 cubes so the Rubiks cube is made up of 54 cubes.

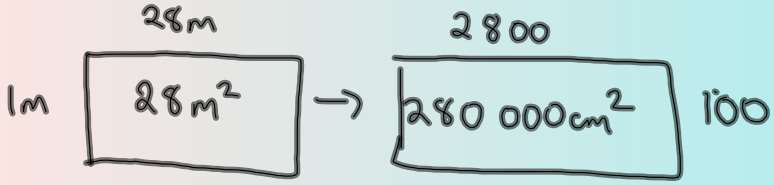
Converting Units

Convert $1m^2$ to cm^2

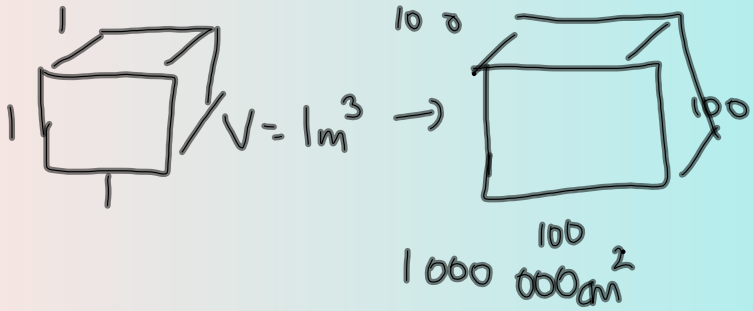


This square has sides of length 1m.
Find its area in metres² and cm².

Convert $28m^2$ to cm^2



Change $1m^3$ to cm^3



Page 142 Qu F2

In your envelopes are a mixture of exam questions. Place them in order of difficulty.

Triangular prism	2 marks	C
Algebraic rectangle	5 marks	C
Bicycle	4 marks	C
Triangle and square	5 marks	B
Cylinder	3 marks	B
Conversion	2 marks	B

4 - 11 C

12+ B

In your exercise book write down:
I am good at:
I need to revise:

Don't forget to:
Read the question carefully
Check my work through
Write down the units
Show my working carefully
Write something down for as many questions as possible.