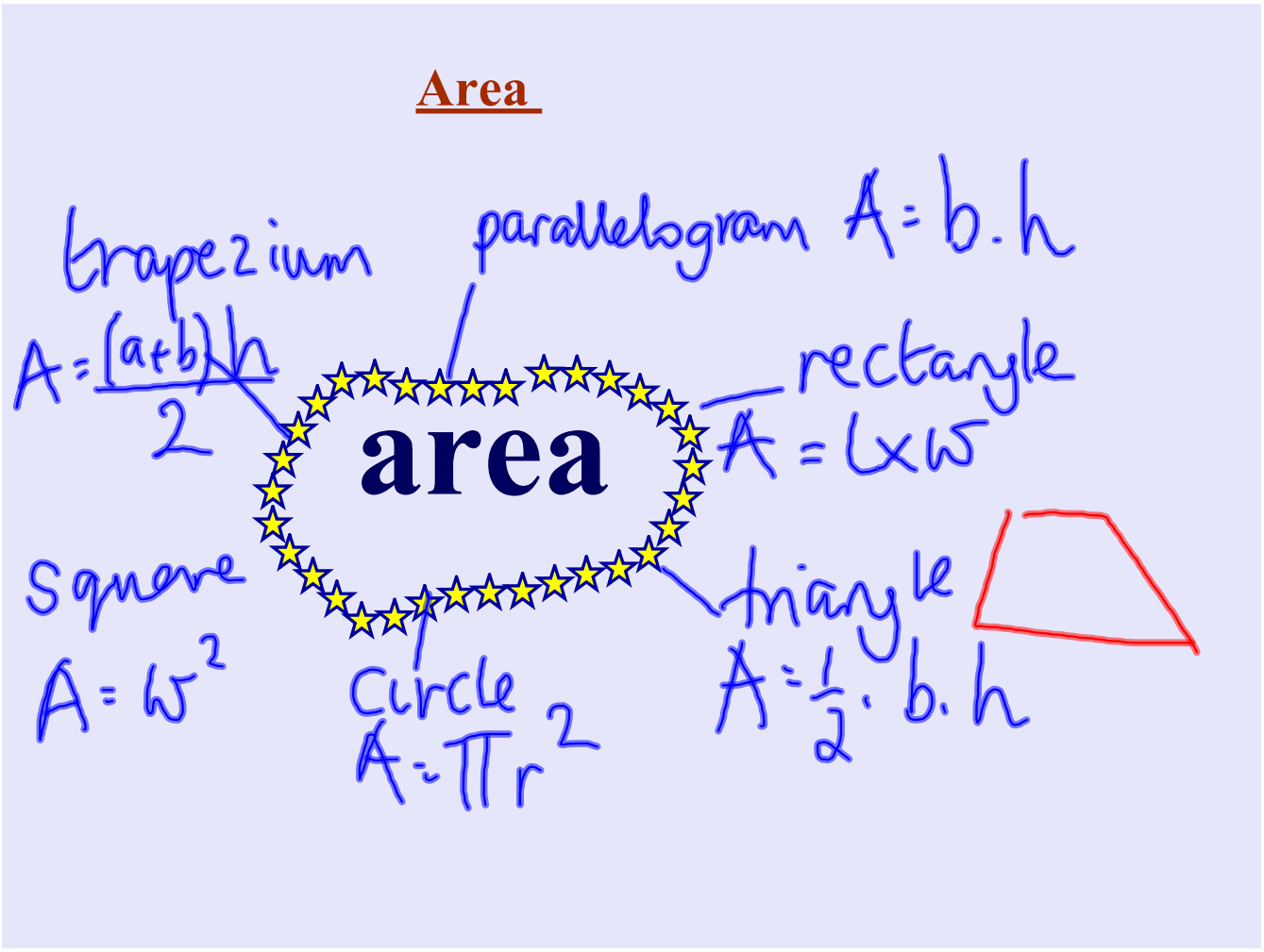
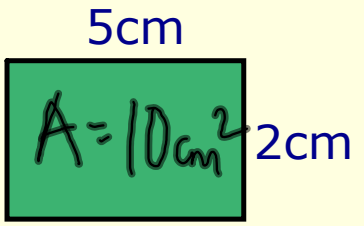
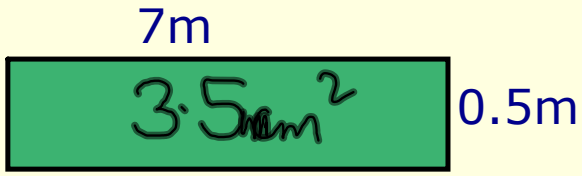
Area

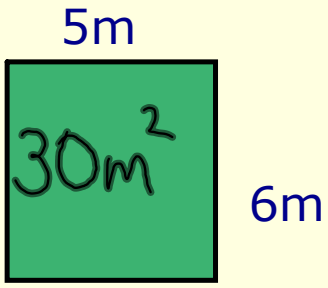

area
trapezium
$A = \frac{(a+b)h}{2}$
parallelogram
$A = b \cdot h$
rectangle
$A = l \times w$
square
$A = w^2$
circle
$A = \pi r^2$
triangle
$A = \frac{1}{2} \cdot b \cdot h$

Area of rectangles and compound shapes

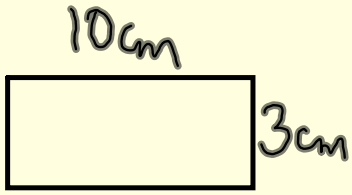
Find the area of each shape

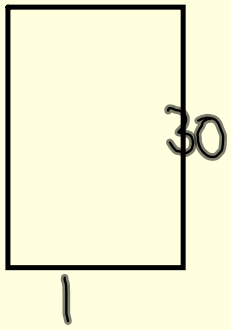






Draw 3 rectangles with area 30cm^2.





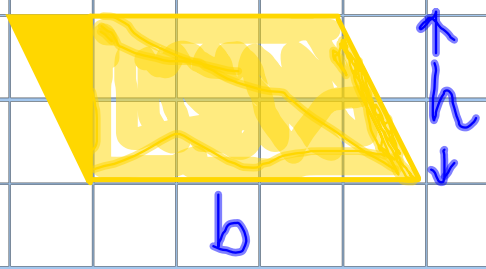
2 x 5 x 12

2 x 15

0.25 x 120cm

Area of Parallelograms

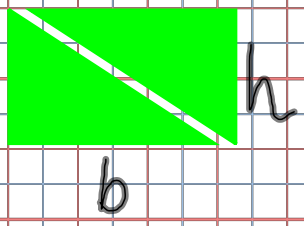
gsp



Area of a parallelogram = base x ht

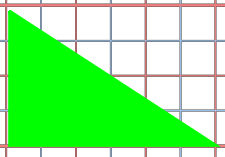
Page 74 A2-A12 evens only A3

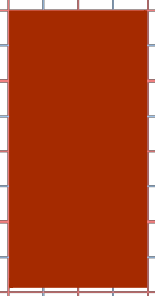
Area of Triangles



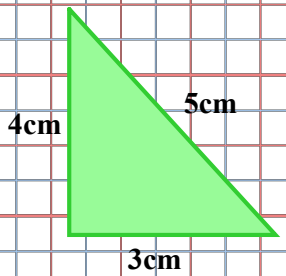
Area of triangle =

$A = \frac{1}{2}bh$





Area of a triangle =



page 76 B1 - B6

Compound shapes

millie and douglas fighting over area

TEST!

Compound shapes are made up of more than one shape.

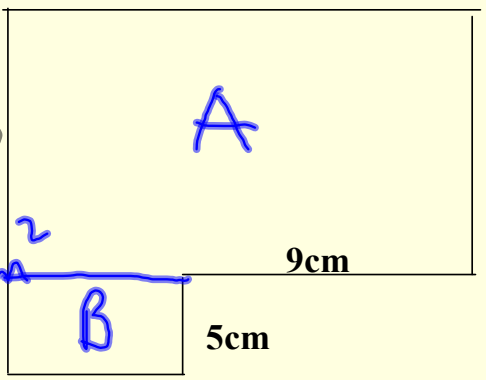
15x15

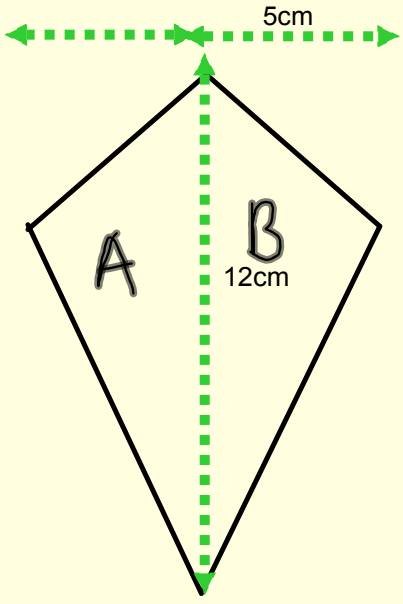
Area of A = 225

5x6

Area of B = 30

Total Area = 255cm²





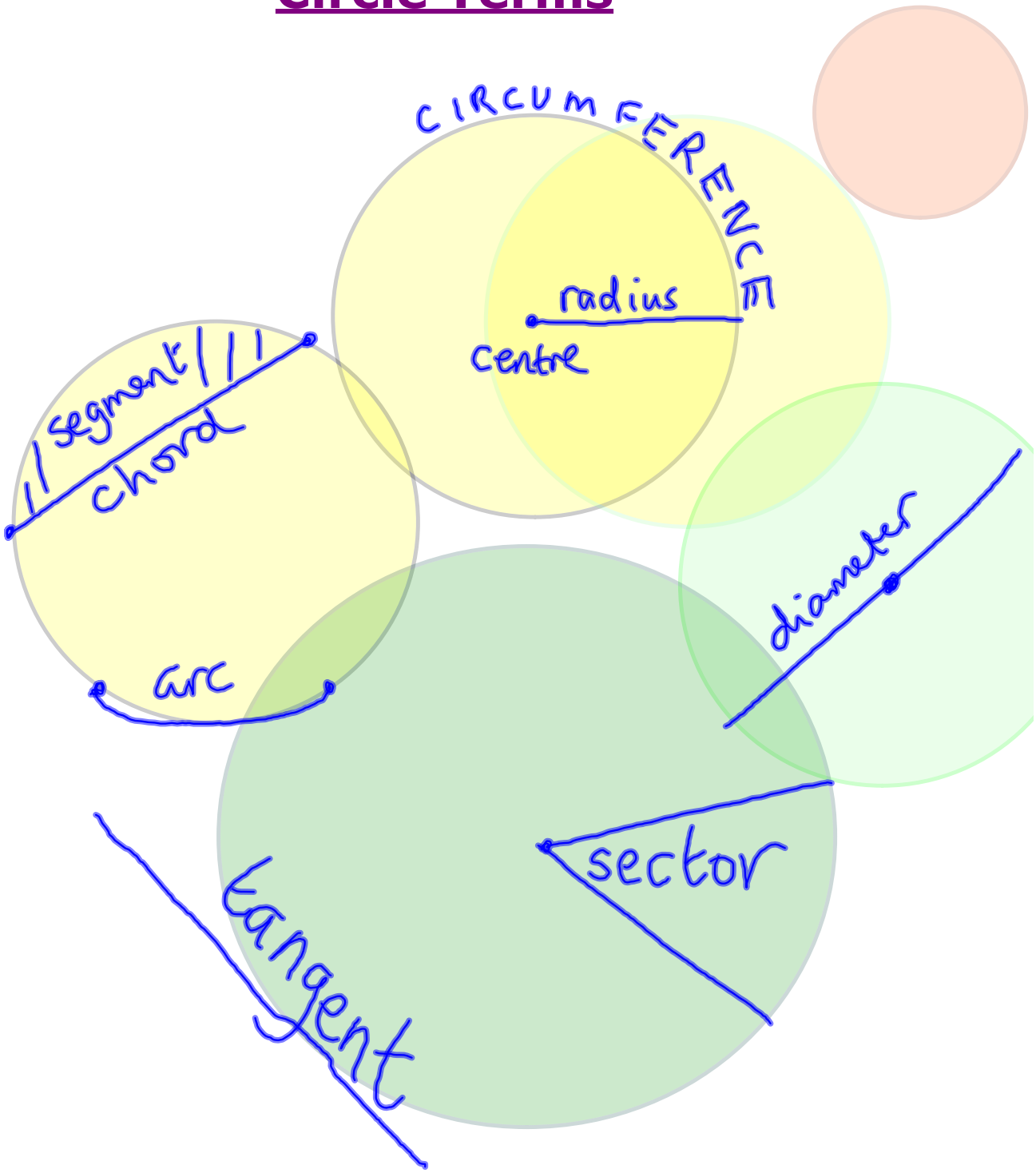
Area of A = $\frac{1}{2}$ x 5x12

= 30

Area of B = 30

Total area = 60cm²

Circle Terms

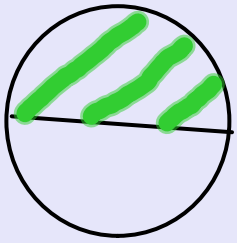


Circles

Area of a circle = πr^2

($\pi = 3$)

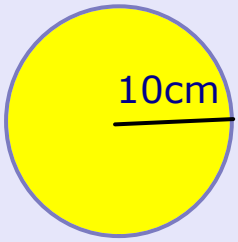
Area of a semicircle= $\frac{1}{2}\pi r^2 = \frac{\pi r^2}{2}$



Circumference of circle $= 2\pi r = \pi d$

Perimeter of a semicircle= πr

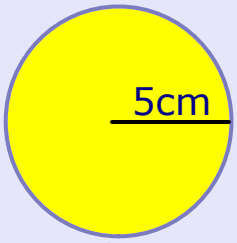
Area



$\pi = 3$

$A = \pi \times 10^2$

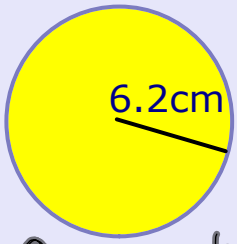
$= 300cm^2$



$\pi = 3$

$A = \pi \times 5^2$

$A = 75cm^2$



Answer in terms of π

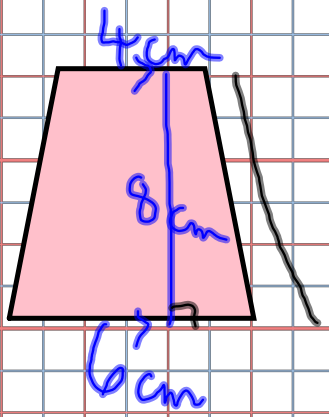
$A = \pi r^2$

$A = 38.4\pi$

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

$C = \pi d = 2\pi r$ $A = \pi r^2$

Area of a trapezium



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

$$= \frac{(4+6)\times 8}{2}$$

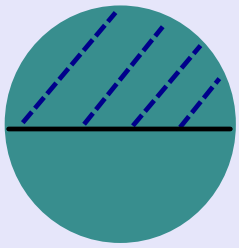
$$= \frac{10 \times 8}{2} = 40\,cm^2$$

Page 80 C2 onwards

a) b) f)

worksheet on assorted areas

Areas of sectors of a circle



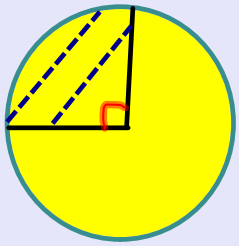
Find the area of the semi-circles

1) r= 5cm

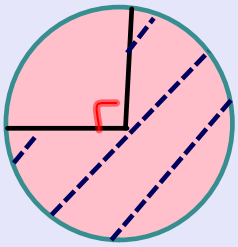
2) r = 6cm

3) d = 4cm

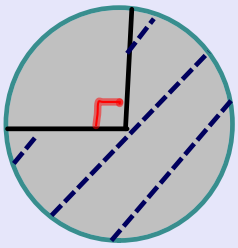
Find the area of the shaded section:



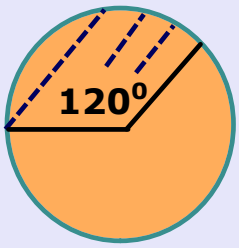
r = 10cm



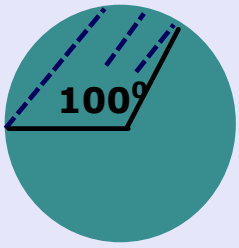
r= 8cm



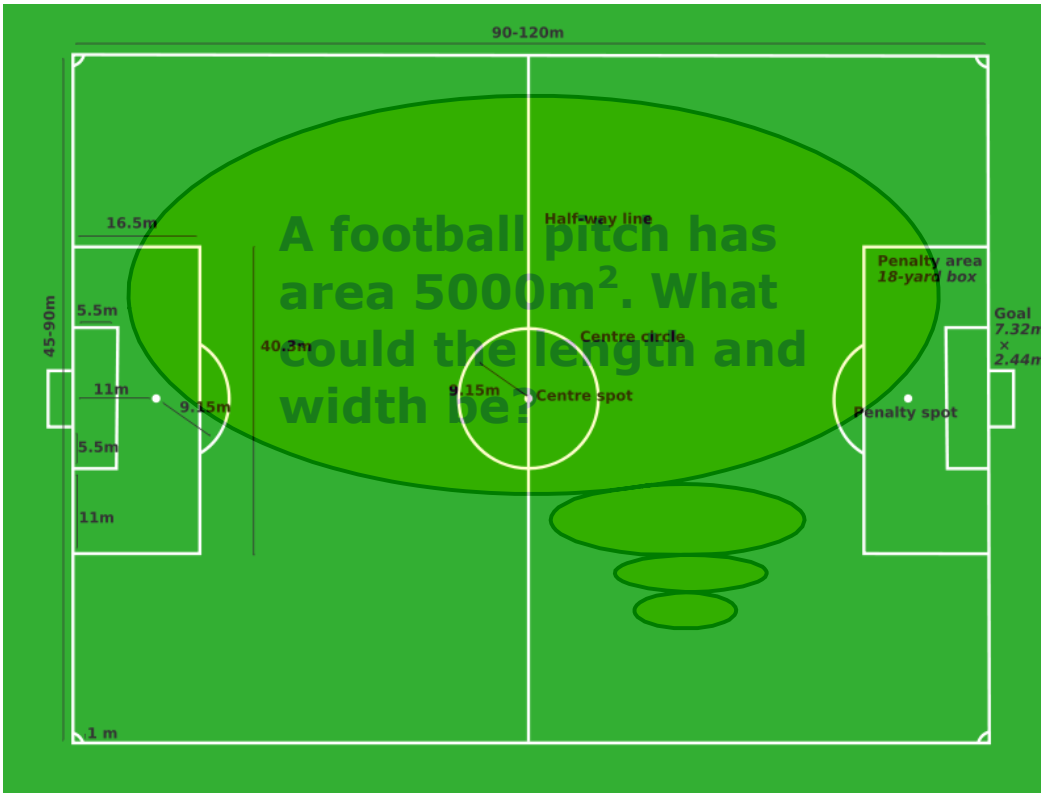
d= 10cm



r = 20cm



r = 4cm



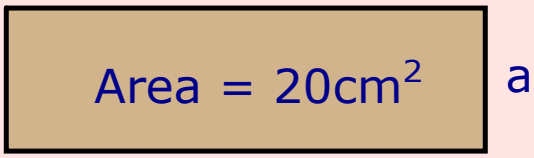
A football pitch has area 5000m^2. What could the length and width be?

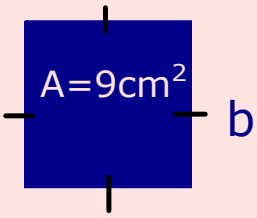
100m = km
50m = km

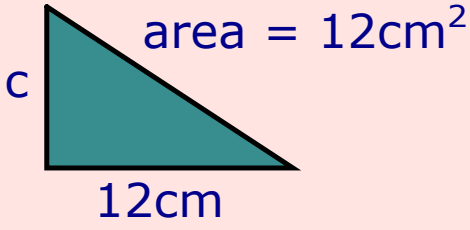
Area = lx w =

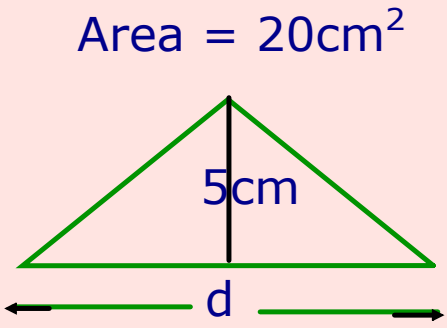
Each of these shapes has a missing dimension.

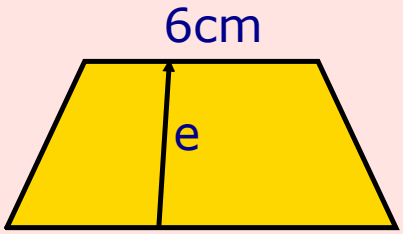
Try to find it:



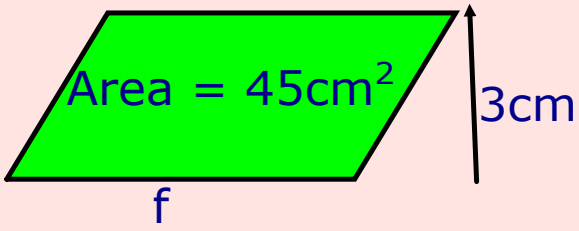


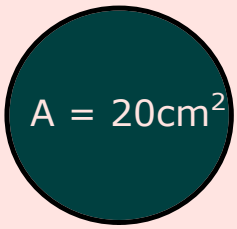






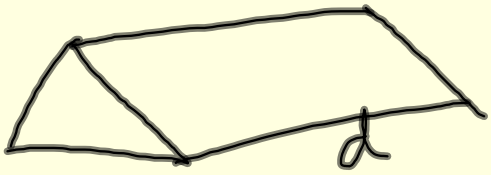
Area = 32cm²





Find the radius!

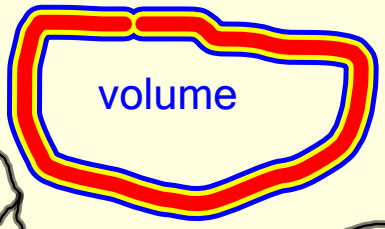
Volume

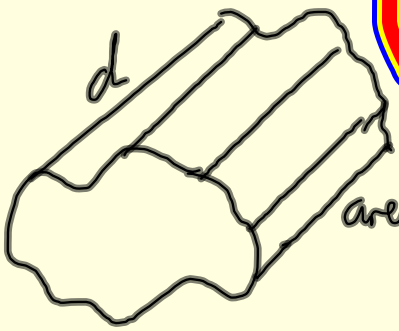


$V = \frac{b \times h}{2} \times d$

Cuboid

$V = b \times h \times d$



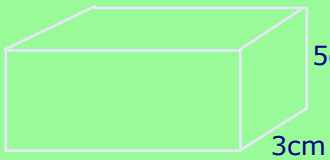


area of face x depth

Cylinder

$V = \pi r^2 h$

Volume



$V = 150cm^3$

$5 \times 30 \times 1$

$6 \times 5 \times 5$

$10 \times 15 \times 1$

$1 \times 1 \times 150$

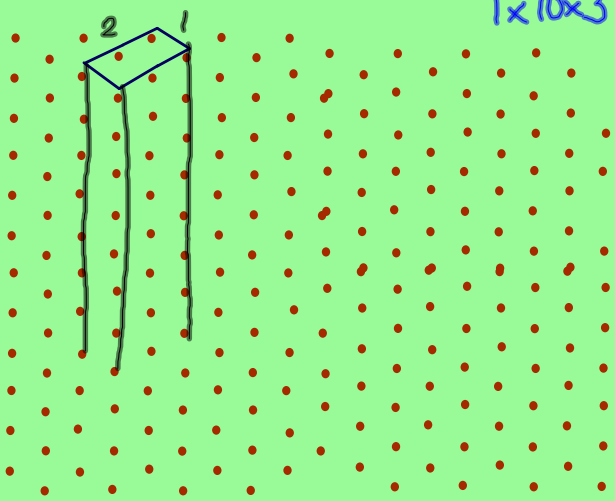
On dotty paper draw 5 cuboids with volume $30cm^3$.

$1 \times 2 \times 15$

Make sure the paper is the right way up!

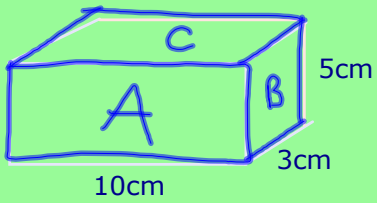
$6 \times 5 \times 1$

$1 \times 10 \times 3$



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=

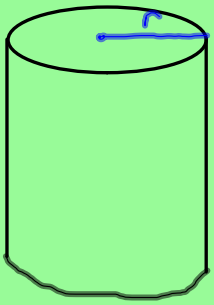
Area of A+B+C =

Total area =

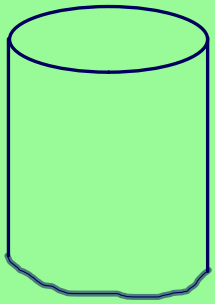
Find the surface area of each of your 5 cuboids.

Volume of cylinders

A3
A5
A7
A8



$Vol = \pi r^2 h$



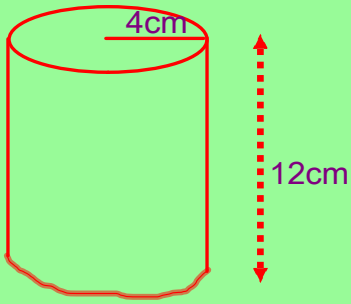
Find the volume of the cylinder

h=10cm
r= 6cm

$Vol = \pi r^2 h$

$V = \pi \times 6^2 \times 10$

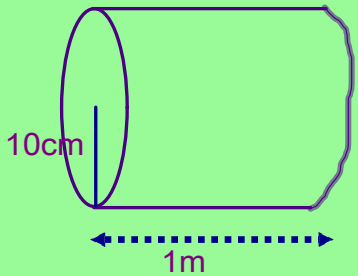
$= 1130.9\ cm^3$



Volume = $\pi r^2 h$

$V = \pi \times 4^2 \times 12$

$= 603.2\ cm^3$



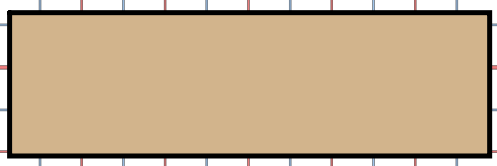
Find the volume of the cylinder.

$V = \pi r^2 h$

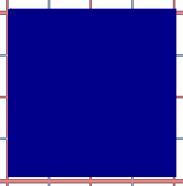
$= \pi \times 10^2 \times 100$

$= 31415.9\ cm^3$

Draw, with area 16cm^2:

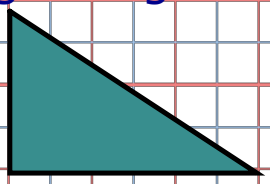
a rectangle  (doesn't have to be scale)

(easy)

a square: 

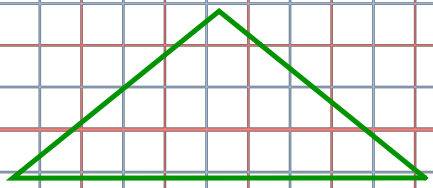
(easyish)

a right angled triangle:

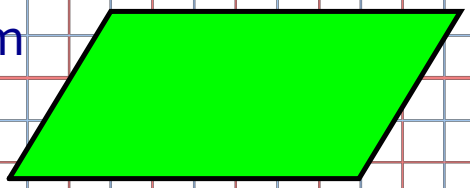


(might stretch you)

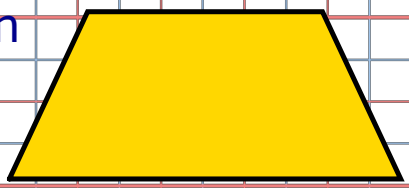
a non-right angled triangle:



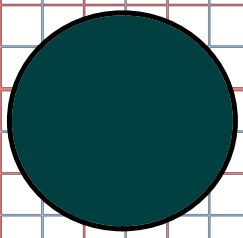
(easy if you don't panic)

a parallelogram 

(easy if you can remember the formula)

a trapezium 

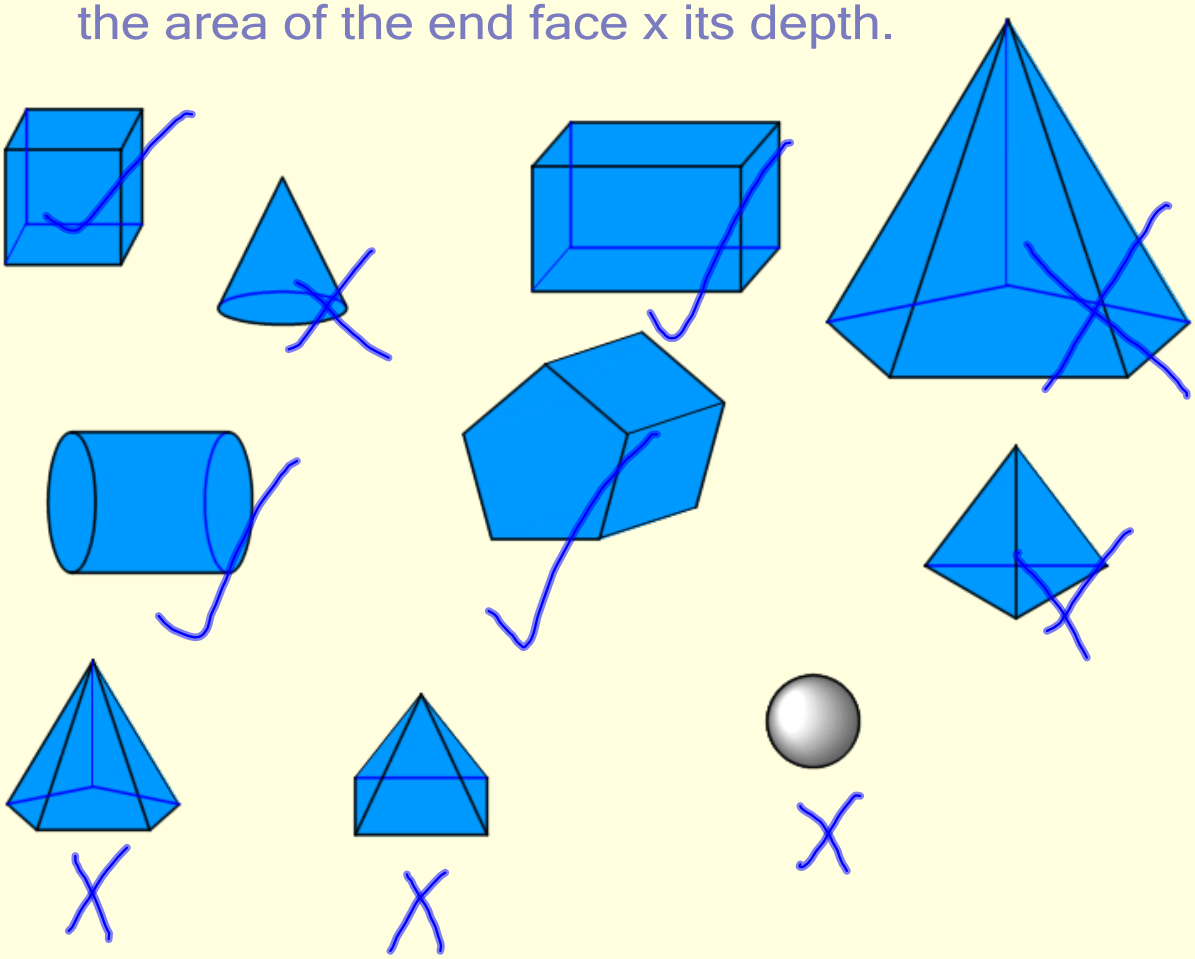
(should keep you busy for a few minutes)

a circle 

(this will activate your grey cells)

Volume

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



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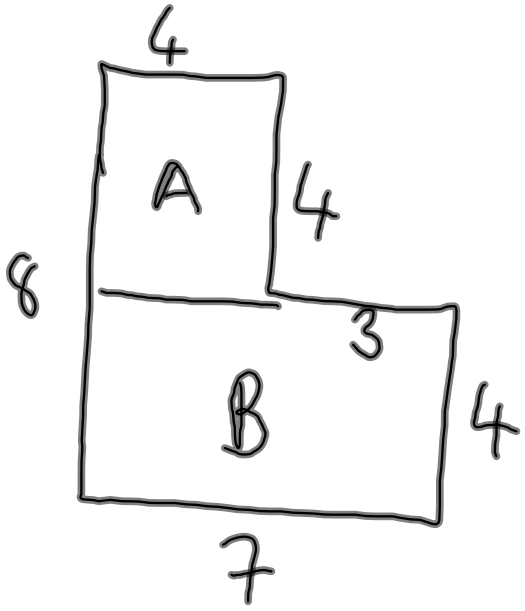


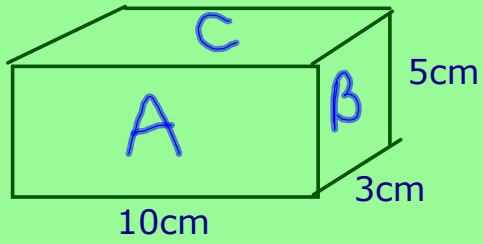
$A = 16$

$B = 7 \times 4 = 28 cm^2$

Total area $= 44 cm^2$

Volume $= 44 \times 3 = 132 cm^3$

Surface Area



Surface area is...

area of A= 50

area of B= 15

area of C= 30

+ 95cm² (5×10 + 3×5 + 3×10)

Area of A+B+C = 95cm²

Total area = 190cm²

Write down the dimensions of 4 other cuboids that could have volume 150cm³.

Find the surface area of each of your 5 cuboids.

V=150cm³ 15×10×1 =150cm³

7.5×10×2

50×3×1

15×2×5 (1)

2×50×1.5

(4) 2.5×30×2

(2) 5×5×6

30×5×1

(3) 3×25×2

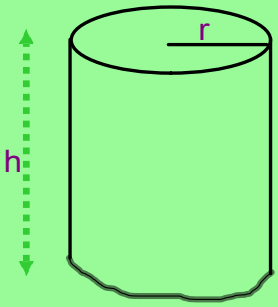
(1) SA = 230cm²

(2) 170cm²

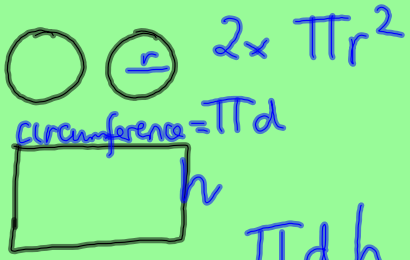
(3) 262cm²

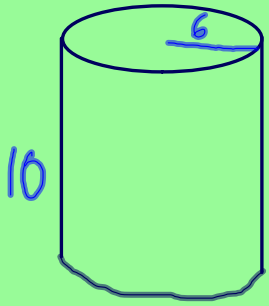
(4) 280cm²

Surface area of cylinders



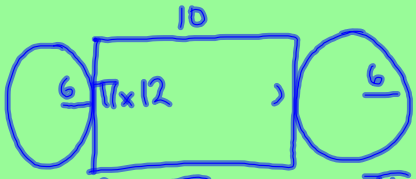
What does the net look like?





Find the surface area of the cylinder

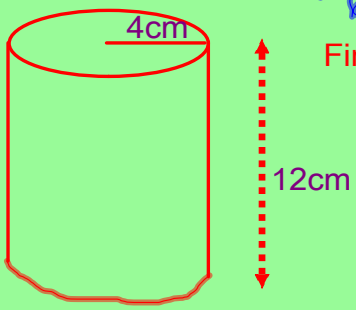
h=10cm
r= 6cm



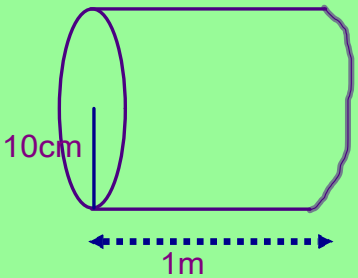
Area = $\pi \times 6^2 + \pi \times 12 \times 10 + \pi \times 6^2$

$= 226.19 + (\pi \times 12 \times 10)$

$= 603 cm^2$

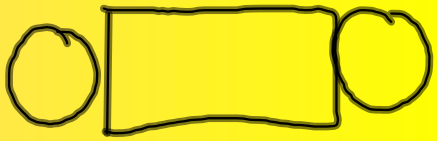


Find the surface area



Find the surface area of the cylinder.

Make the net of a cylinder.



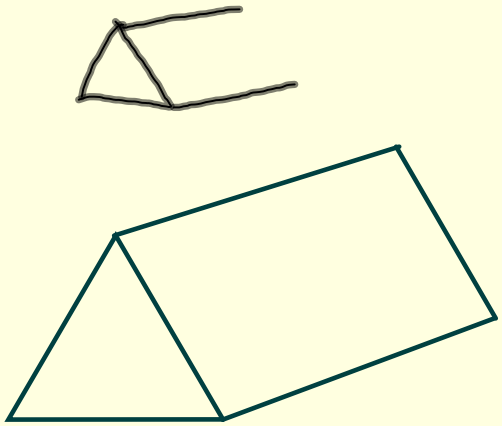
THINK about:
The dimensions of the circles first, then make a rectangle to fit.

FIND the volume and surface area.

Paste it into your book and write up your results.

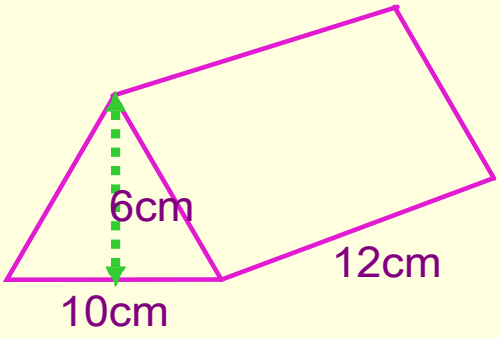
EXTENSION:
Make a cylinder with volume 100cm^3.

Volume of a Triangular prism



Vol = area of Δ × depth

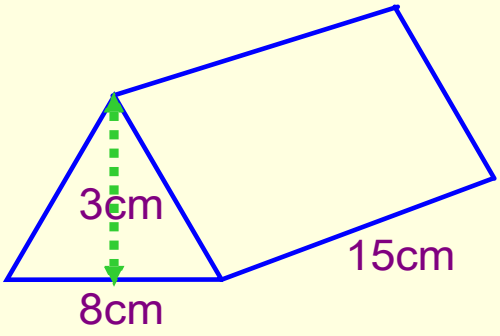
$= \frac{1}{2} \cdot b \cdot h \cdot \text{depth}$



Find the volume of the prism.

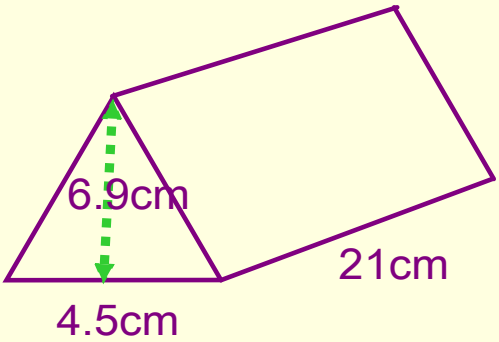
$Vol = \frac{1}{2} \times 10 \times 6 \times 12$

$= 360 cm^3$



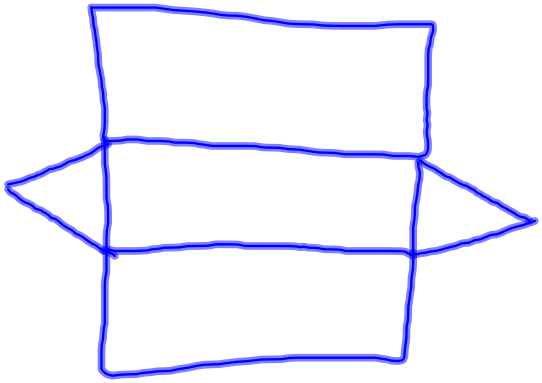
$Vol = \frac{1}{2} \times 3 \times 8 \times 15$

$= 180 cm^3$



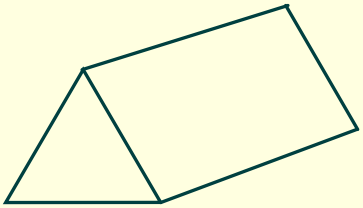
$Vol = \frac{1}{2} \times 4.5 \times 6.9 \times 21$

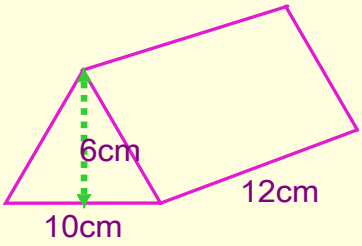
$= 326.0 cm^3$



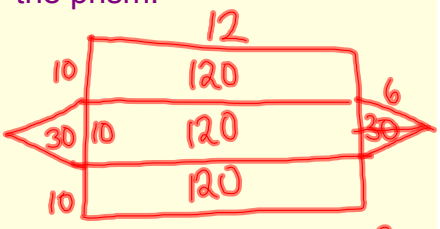
Surface area of a Triangular prism

What does the net look like?

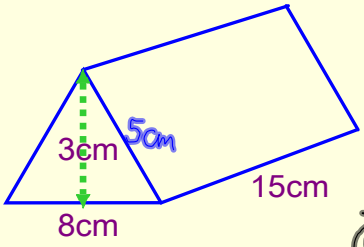


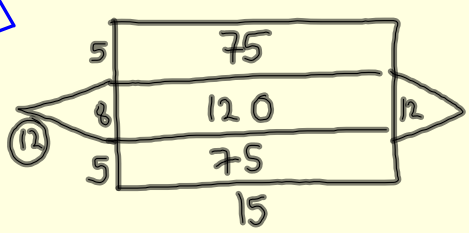


Find the surface area of the prism.

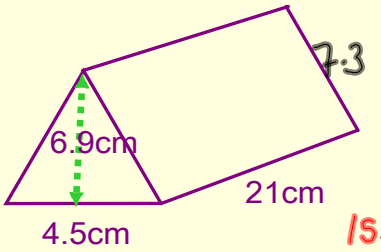


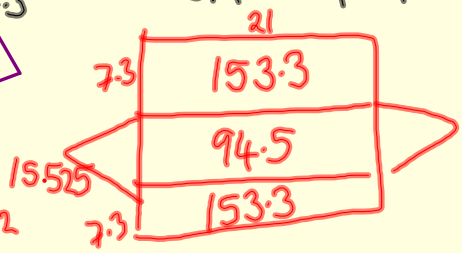
Total SA = 420 cm²





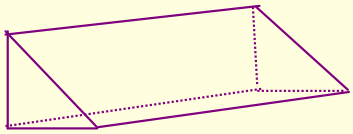
SA = 294 cm²





SA = 432.2 cm²

- **Make a right-angled triangular prism with volume 100cm^3.**



Mixed C/B questions:
Edexcel intermediate page 315, 319 not qu3

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. (D+)
Find its volume and surface area.

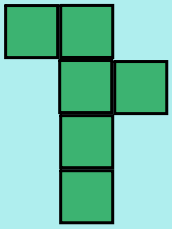
Make the net of a cuboid with volume $40cm^3$.
Find its surface area.
(C)

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

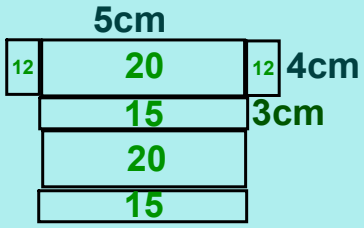
In your exercise book draw the net of a cube. (E)



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

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

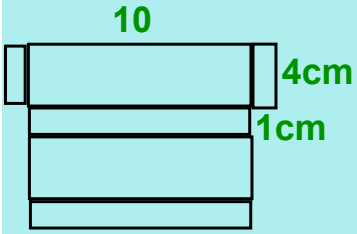
In your exercise book draw the net of a cuboid
3cm x 4cm x 5cm. (D+)
Find its volume and surface area.



$V=3x4x5=60cm^3$

$SA= 94cm^3$

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

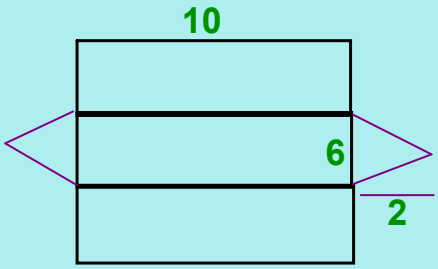


$SA=80+20+8=108cm^2$

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)

Homework

Page 143 Test yourself
For Thursday

Converting Units convert 1m^2 to cm ^{2}

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

page 428: Interact foundation

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.