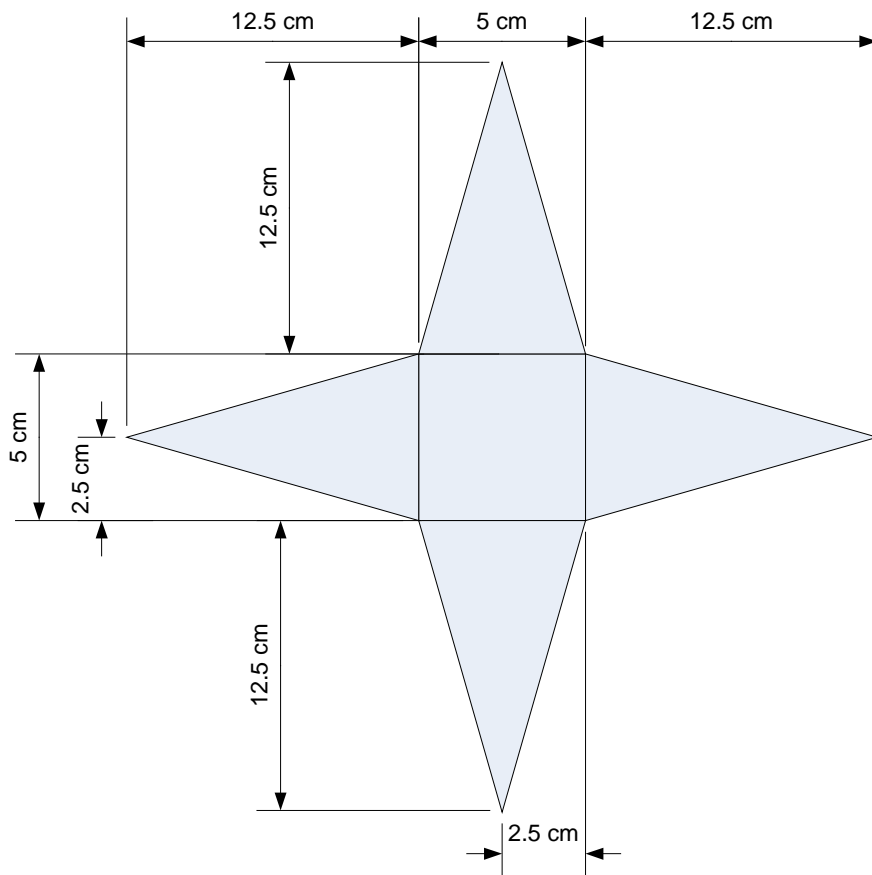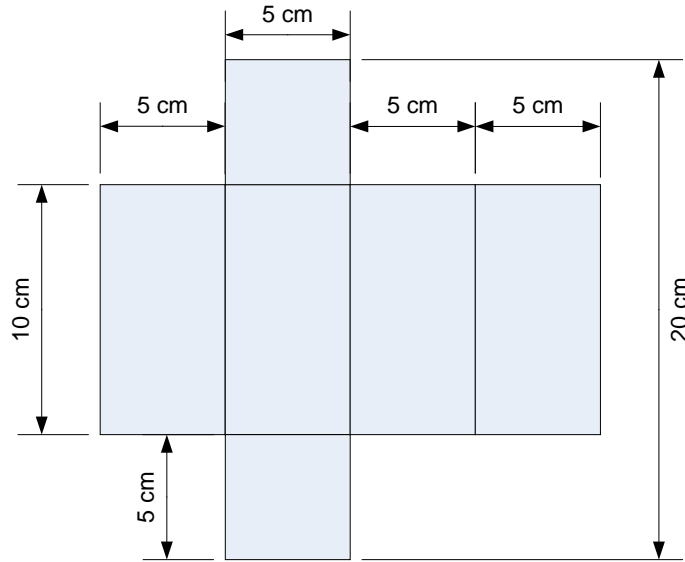# Maths Day

Please use this document in conjunction with www.achildsguideto.com to help you to revise your mathematics to prepare you for the examination.

Convert these nets into isometric elevations

Join the box on the left to the correct box on the right.

Treble x then double the answer.	2x + 5
Double x then treble the answer.	2(x + 5)
Subtract 5 from x.	x - 5
Double x and then subtract 5.	5 - x
Subtract x from 5.	2x - 5
Divide x by 3.	2(x - 5)
Double x then add 5.	2(3x)
Multiply x by three then divide by two.	3(2x)
Multiply x by two then divide by three.	$\frac{x}{3}$
Add 5 to x and then double it.	$\frac{3x}{2}$
Subtract 5 from x then double it.	$\frac{2x}{3}$

I am thinking of a number. If I double the number, I get a third of the square root of sixty-four. What is the number of which I am thinking?

I am thinking of another number. Trebling this number will give me the same number as I would get if I doubled my original number plus half again. My number, which is less than forty, is a multiple of ten, as is my number plus half again.

I am thinking of two numbers, x and y. If I add 3 times x to 2 times y, I get 39. If I subtract 2y from 3x, I am left with 3. With what numbers did I begin?

Su Doku Puzzles. Fit the numbers 1 to 9 in each horizontal row and each vertical column as well as the boxes of nine squares.

	4	7		5				8
6		5		3		2		1
			7		6		3	
		6		7			2	4
9			8		4			6
4	5			1		9		
	1		5		2			
2		8		4		5		3
5				9		7	1	

		9						
6		8			3			4
	1		9		8			5
7		1						
	4			8			2	
						5		3
8			2		9		4	
4			1			9		6
						2		

110.00

200.00

R 25.00

R 15.00

R 30.00
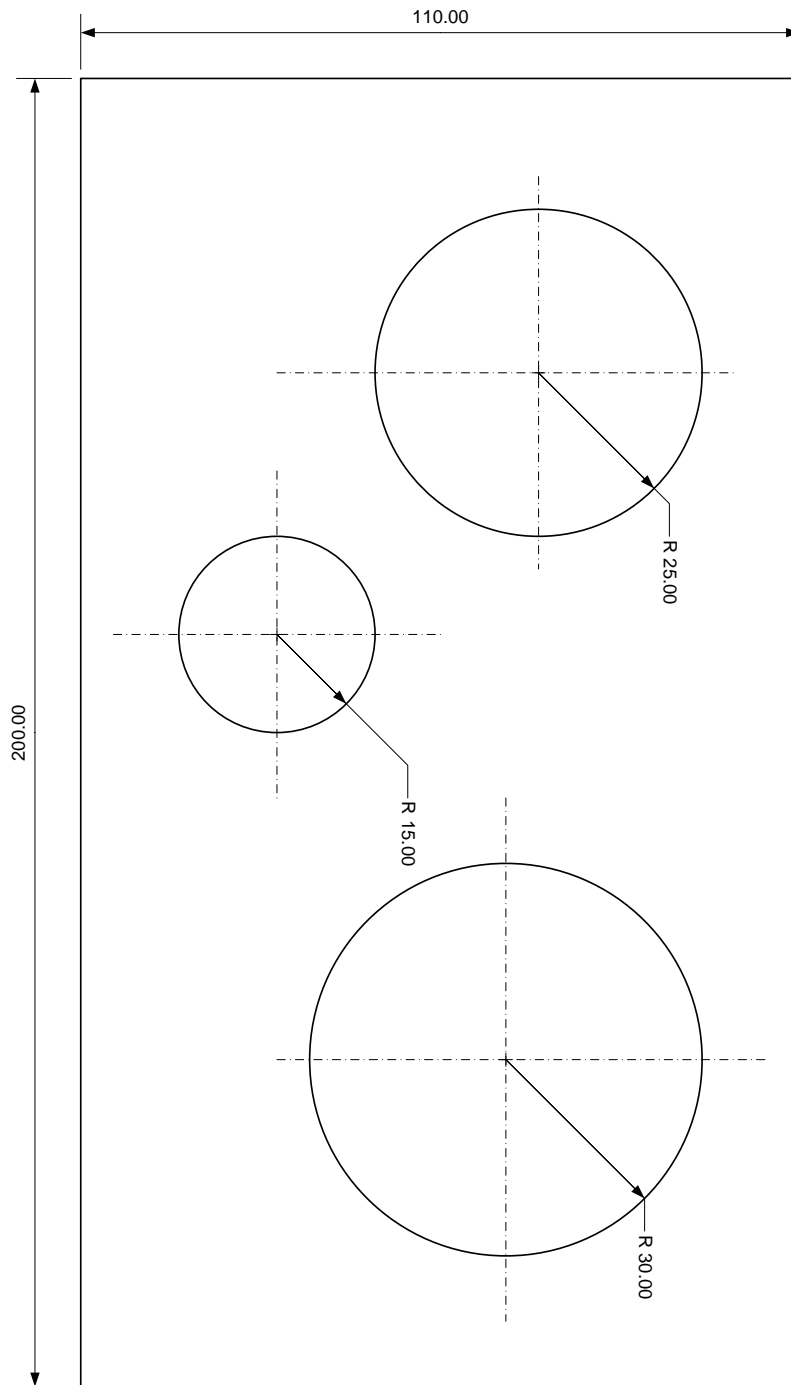
Do NOT Scale

What percentage of the rectangle is outside the circles?

			0		
1 - 18	1 - 12		1	2	3
			4	5	6
	Even		7	8	9
			10	11	12
	Red		13	14	15
	13 - 24		16	17	18
			19	20	21
	Black		22	23	24
	Odd		25	26	27
19 - 36	25 - 36		28	29	30
			31	32	33
			34	35	36
			A	B	C

Roulette is a game of chance but are the odds stacked against the punter?

Look at the table below:

Bet	Odds
Aqua	Evens
Twelve numbers	2:1
Six Numbers	5:1
Four Numbers	8:1
Three numbers	11:1
Two numbers	17:1
One number	35:1

Bet One: £0.50 on each bet.
Singles: 17, 18, 20, 26
Doubles: 17-20, 25-26, 8-11
Trebles: 16 -17-18, 25-26-27
£5 on Column A. £5 on Black. £5 on first twelve. £5 on second twelve.
It comes in **17**.
How much do you bet?
How much do you get back?

Bet Two: £1.50 on each bet.
Singles: 17, 19, 20, 26
Doubles: 17-20, 25-26, 8-11, 0-2
Trebles: 16 -17-18, 25-26-27
Fours: 5-6-8-9, 13-14-16-17
£5 on Column B. £5 on Black. £5 on second twelve.
It comes in **0**.
How much do you bet?
How much do you get back?

What number would have been the best win for you?

Construct a perpendicular bisector to this line.

Bisect this angle using a straight edge and a compass.
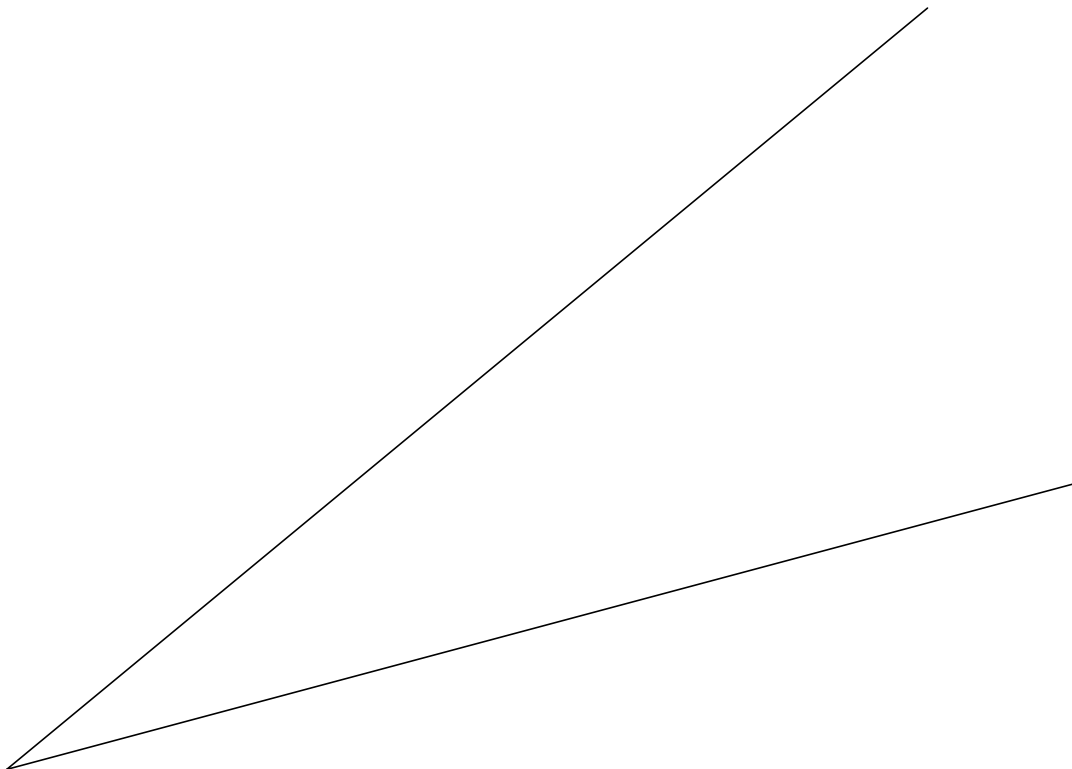
Logo

Logo is a computer language for drawing shapes. There are several simple commands. The commands control a turtle.

Forward n (where n is the number of units forward.)

Left d (where d is the number of degrees left that the turtle turns.)

Right d (where d is the number of degrees right that the turtle turns.)

How do you draw these shapes?

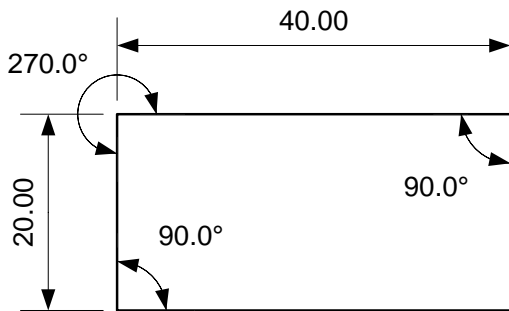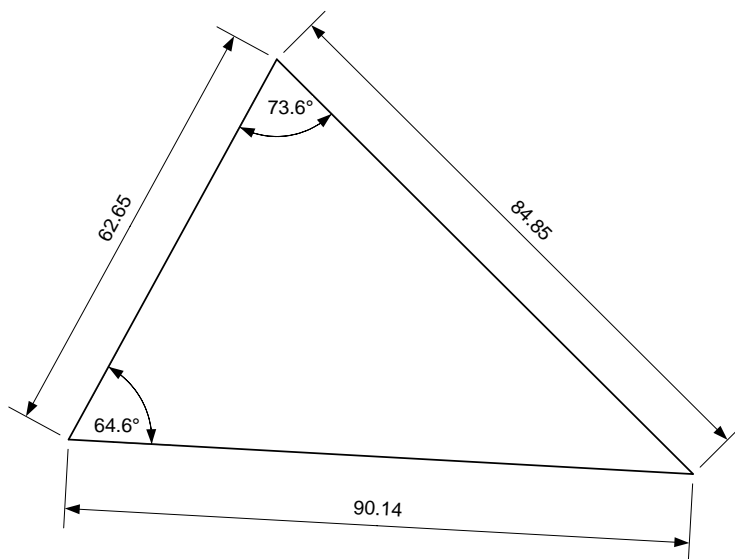|	Smith	Jones	James	Howe	Margaret	Robert	Sheila	Fred	Doctor	Golfer	Teacher	Banker	3.2 L	2.8 L	1.6 L	1.2 L	White	Red	Green	Blue
Ferrari																				
Ford																				
Golf																				
Porsche																				
Blue																				
Green																				
Red																				
White																				
1.2 L																				
1.6 L																				
2.8 L																				
3.2 L																				
Banker																				
Teacher																				
Golfer																				
Doctor																				
Fred																				
Sheila																				
Robert																				
Margaret																				

1. Although the banker, whose surname was Jones, had a 3.2L car, his girlfriend didn't like it because it was Red. It was not the white Ford as this had an engine capacity of 1.2L.

2. The green Ferrari was not owned by the Doctor. She didn't like red cars either. The teacher owned the blue car.

3. The 2.8 L car was not owned by the teacher. It was owned by Mr Howe. Sheila loved her blue car. Dr. James did not own the blue car nor the Golf.

4. Although Robert was a professional golfer, he could not fit his clubs in the boot of a Golf 1.6L and so had to drive a different type of car (which was green).

Car	Colour	Engine Size	Profession	First name	Surname

Number sequences

Term	1	2	3	4	5	6	7	8	9
Number	7	13	19	25	31	37	43	49	55

The formula for the numbers in the sequence is ...

The 100th term of this sequence will be ...

The 1000th term of this sequence will be...

Term	1	2	3	4	5	6	7	8	9
Number	5	8	13	20	29	40	53	68	85

The formula for numbers in this sequence is...

$$2n + 5 \qquad (n+2)^2$$

$$3n+(2n-n) \qquad\qquad 3n - 2$$

$$n^3 - 4n \qquad n^2 + 4$$

The 500th term in the sequence will be...

The 5000th term in the sequence will be...

Term	1	2	3	4	5	6	7	8	9
Number	59	56	51	44	35	24	11	-4	-21

The formula for the sequence is ...

The 20th term is...

The 50th term is...

The 100th term is...
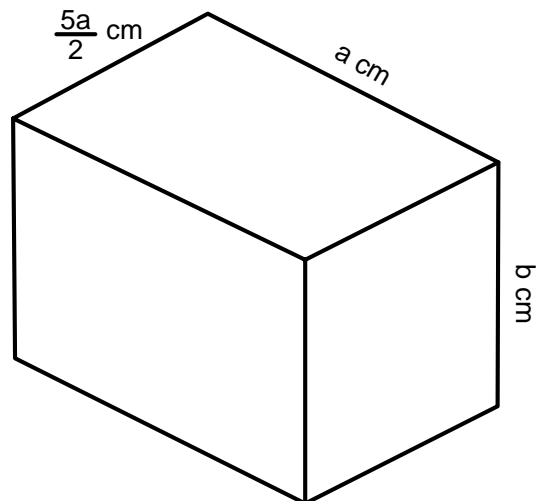
$\frac{2a}{3}$ cm   2a cm   a cm
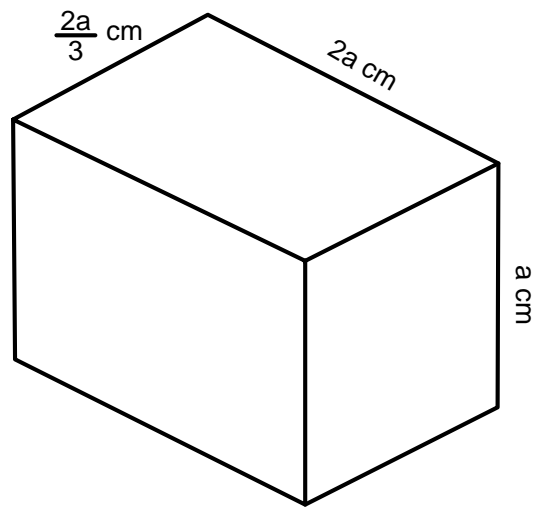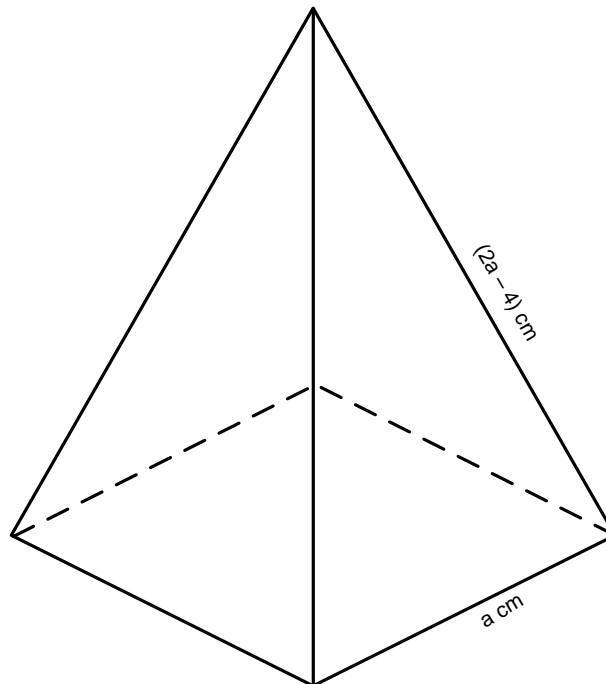
The shape illustrated above is a cuboid.

Calculate a formula that will give you:

- the length of the edges in the shape;
- the surface area of the shape;
- the volume.

Now do the same for this shape:

$\frac{5a}{2}$ cm   a cm   b cm

Below is a square based pyramid.

Can you give an expression for:

- the overall length of the edges;
- the volume of the pyramid;
- the surface area of the pyramid?

Hints:

1   This is a lot harder than it looks.

2   Work out the length of the triangle at the centre of the slope using Pythagoras' Theorem.

3   You then need to work out the triangle dimensions for the triangle that is formed by taking one side down the exact centre.

How many vertices are there in each of the shapes?

Calculating the chances of one thing happening and then another is quite simple.

All you need to do is multiply the chances of the first thing happening by the chances of the second thing happening.

The events need to be independent.

1.   What are the chances of throwing a seven with two dice four times in a row? (You need to know all the possible combinations).

2.   What are the chances of throwing a three and a four with two dice for times in a row?

3.   What are the chances of not throwing a seven at all in five throws?

4.   What are the chances of throwing a pair of fair dice eleven times and getting the following sequence: 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2?

5.   What are the chances of repeating the above experiment and never hitting the correct number on that throw?

	Audi	Ford	Volkswagon	Comp. Games	Football	Swimming	English	History	Maths
Ben									
Joshua									
Lydia									
English									
History									
Maths									
Comp. Games									
Football									
Swimming									

1. Ben, whose dad drives an Audi likes maths.

2. The historian doesn't like swimming while the person who likes computer games also loves English.

3. The footballer, whose dad drives a Volkswagon, is keen on history.

4. Lydia doesn't like English.