

October

"Skill is only developed by hours and hours of work."
– Usain Bolt



Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

$$s = ut + \frac{1}{2}at^2 \quad 1$$

A car is stopped at traffic lights. When the light is green the car accelerates at 5m/s^2 . How far does the car travel in 10 seconds?

$$\quad 2$$

The cost of a tax bill increased by 5%. The tax bill after the increase is £672. Work out the cost of the tax bill before the increase.

$$\quad 3$$

Expand and simplify:

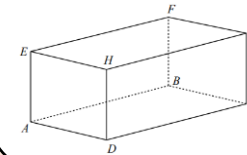
$$\text{a) } (3x + 5)(x - 7)$$

b)

$$(x + 1)(x + 2)(x - 5)$$

$$\quad 4$$

AE=4cm
AD=5cm DC=8 cm
Calculate the length of AG.



Rationalise the denominator:

$$\text{a) } \frac{3}{5 + \sqrt{7}}$$

$$\text{b) } \frac{5 + 2\sqrt{3}}{2 + \sqrt{3}}$$

$$\quad 6$$

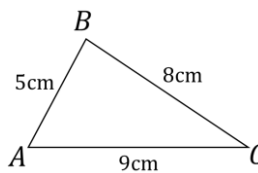
Here are the first four terms of a geometric sequence.

$$3 \quad 3\sqrt{5} \quad 15 \quad 15\sqrt{5}$$

Find the n th term.

$$\quad 7$$

Find the size of angle BAC .



$$\quad 8$$

Max and Seb have sweets in the ratio 5 : 6. Max gets two more sweets. The ratio is now 7 : 8. How many sweets does Seb have?

$$\quad 9$$

A circle has equation $x^2 + y^2 = 80$. Calculate the diameter of the circle. Give your answer as a surd in its simplest form.

$$\quad 10$$

Write down the exact value of:

$$\text{a) } \cos(60)$$

$$\text{b) } \sin(45)$$

$$\quad 11$$

Here is an exponential growth model.

$$P = 120r^t$$

When

$$t = 1, p = 138$$

Find r .

Given that

$$f(x) = 4x - 3$$

$$g(x) = 2x + 1$$

a) Find $gf(3)$

b) Find $f^{-1}(13)$

c) Solve $f(x) = g(x)$

$$\quad 13$$

Shape A and B are similar. Shape A has a surface area of 20cm^2 and shape B's is 180cm^2 . The length of shape A is 4cm. Find the length of shape B.

$$\quad 14$$

A has a density of 1.2g/cm^3 . 150cm^3 of A is mixed with some of B to make C. C has a mass of 220g and a density of 1.1g/cm^3 . Find the density of B.

$$\quad 15$$

Using

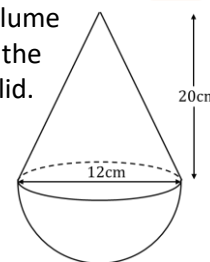
$$x_{n+1} = 3 + \frac{9}{(x_n)^2}$$

with $x_0 = 3$

Find the values of x_1, x_2 and x_3 .

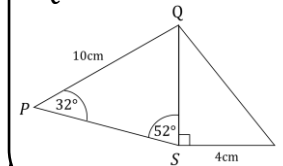
$$\quad 16$$

Calculate the volume of the solid.



$$\quad 17$$

Find the size of angle QRS .



$$\quad 18$$

Find the equation of the line between (2,3) and (5,-6)

$$\quad 19$$

Calculate the frequency density for the class $0 < x \leq 20$ with a frequency of 64.

$$\quad 20$$

Write $\frac{5}{12}$ as a recurring decimal.

$$\quad 21$$

Prove algebraically that the sum of any three consecutive even integers is always a multiple of 6.

$$\quad 22$$

The probability a bus is late on Monday is 0.1 and on Tuesday is 0.3. What is the probability it is late on at least one of the days?

$$\quad 23$$

d is directly proportional to the square of t . $d = 80$ when $t = 4$. Work out the positive value of t when $d = 45$

$$\quad 24$$

Solve:

$$\frac{2}{5-x} + \frac{3}{x+7} = 1$$

$$\quad 25$$

Oxford is on a bearing of 330° from Cambridge. Find the bearing of Cambridge from Oxford.

$$\quad 26$$

$$177147 = 3^{11}$$

$$270 = 3^3 \times 2 \times 5$$

Find the LCM of 270 and 177 147. Give your answer using power notation.

$$\quad 27$$

The first and second terms of a Fibonacci sequence are x and y . Write an expression for the fourth term.

$$\quad 28$$

An athlete runs 240 metres in 45 seconds. Work out her average speed in kilometres per hour.

$$\quad 29$$

$$\begin{aligned} &\text{Calculate} \\ &(3.4 \times 10^4) \\ &+ \\ &(2.5 \times 10^5) \end{aligned}$$

$$\quad 30$$

Calculate:

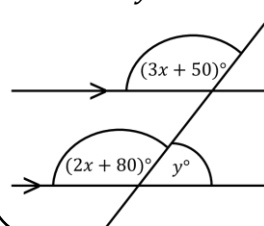
$$\text{a) } 16^{\frac{3}{2}}$$

$$\text{b) } 7^{-2}$$

$$\text{c) } 32^{-\frac{2}{5}}$$

$$\quad 31$$

Find the value of y below.



To do's for this month:

- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Important dates:

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Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			1 250m	2 £640	3 a) $3x^2 - 16x - 35$ b) $x^3 - 2x^2 - 13x - 10$	4 10.2(46 ...)cm
5 a) $\frac{5 - \sqrt{7}}{6}$ b) $4 - \sqrt{3}$	6 $3 \times \sqrt{5}^{n-1}$	7 62.2°	8 48	9 $8\sqrt{5}$	10 a) $\frac{1}{2}$ b) $\frac{\sqrt{2}}{2}$	11 1.15
12 a) 19 b) 4 c) $x = 2$	13 12cm	14 0.8g/cm ³	15 $x_1 = 4$ $x_2 = 3.5625$ $x_3 = 3.7091$	16 1,206.4cm ³	17 59.2°	18 $y = -3x + 9$
19 3.2	20 0.416	21 $2n + 2n + 2$ $+ 2n + 4$ $= 6n + 6$ $= 6(n + 1)$	22 0.37	23 $t = 3$	24 $x = 2$ and $x = -3$	25 150°
26 $3^{11} \times 2 \times 5$	27 $2x + 3y$	28 19.2km/h	29 2.84×10^5	30 a) 64 b) $\frac{1}{49}$ c) $\frac{1}{4}$	31 $y = 40^\circ$	

To do's for this month:

- ☐
- ☐
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Important dates:

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