1st April

Make \( x \) the subject of \( T = 3x^2 - y \)

Find angle ABC

Find angle DAB

Show \( x^2 + 4x - 45 = 0 \)

Find \( x \).

The surface area of the cuboid is 270cm².
2nd April

<table>
<thead>
<tr>
<th>Time, (t)</th>
<th>Cumulative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &lt; t ≤ 40</td>
<td>4</td>
</tr>
<tr>
<td>0 &lt; t ≤ 60</td>
<td>11</td>
</tr>
<tr>
<td>0 &lt; t ≤ 70</td>
<td>16</td>
</tr>
<tr>
<td>0 &lt; t ≤ 80</td>
<td>22</td>
</tr>
<tr>
<td>0 &lt; t ≤ 100</td>
<td>30</td>
</tr>
</tbody>
</table>

Draw a cumulative frequency graph for this information.

Work out

\[ 36^{\frac{1}{2}} + 8^{\frac{1}{3}} \times 27^{\frac{2}{3}} \]

Not drawn accurately

Shown are two logos that are mathematically similar.
The area of the smaller logo is 20cm²
Find the area of the larger logo.
### 3rd April

<table>
<thead>
<tr>
<th>Equation</th>
<th>Which two lines are parallel?</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y = 2x + 1$</td>
<td></td>
</tr>
<tr>
<td>$y = \frac{1}{2}x - 4$</td>
<td></td>
</tr>
<tr>
<td>$y = x + 1$</td>
<td></td>
</tr>
<tr>
<td>$y = -\frac{1}{2}x - 3$</td>
<td></td>
</tr>
<tr>
<td>$y = 10 + x$</td>
<td></td>
</tr>
</tbody>
</table>

### Which two lines are perpendicular?

<table>
<thead>
<tr>
<th>Equation</th>
<th>Write down the equation of the line parallel of $y = 2x + 5$ that passes through the point $(1, 10)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y = 2x + 1$</td>
<td></td>
</tr>
<tr>
<td>$y = \frac{1}{2}x - 4$</td>
<td></td>
</tr>
<tr>
<td>$y = x + 1$</td>
<td></td>
</tr>
<tr>
<td>$y = -\frac{1}{2}x - 3$</td>
<td></td>
</tr>
<tr>
<td>$y = 10 + x$</td>
<td></td>
</tr>
</tbody>
</table>

### Convert 3.3333333... into a mixed number

Find angle ACB

### A bag contains 10 counters. 7 of the counters are red 2 of the counters are purple 1 of the counters are white Sharon chooses a counter at random, records the colour, then replaces it. Sharon then chooses a second counter at random and records the colour.

What is the probability that both counters are the same colour?
4th April

Work out

$5y^0$

Work out

$(5y)^0$

Solve

$x^2 - x = 42$

Find $x$

Use the histogram to complete the frequency table.

<table>
<thead>
<tr>
<th>Values, $v$</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 &lt; v \leq 300$</td>
<td></td>
</tr>
<tr>
<td>$300 &lt; v \leq 500$</td>
<td></td>
</tr>
<tr>
<td>$500 &lt; v \leq 600$</td>
<td></td>
</tr>
<tr>
<td>$600 &lt; v \leq 800$</td>
<td></td>
</tr>
<tr>
<td>$800 &lt; v \leq 1200$</td>
<td></td>
</tr>
</tbody>
</table>
### 5th April

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>3</td>
</tr>
<tr>
<td>10 - 20</td>
<td>30</td>
</tr>
<tr>
<td>20 - 40</td>
<td>30</td>
</tr>
<tr>
<td>40 - 50</td>
<td>9</td>
</tr>
</tbody>
</table>

Nigel wants to draw a histogram.

Calculate the frequency densities.

Find angle ABC

The line A is drawn on the grid.

Find the gradient of line A.

Another line B is parallel to line A and passes through the point (2, 0)

Find the equation for line B.

Helen is taking part in a quiz.
The probability she answers a question correctly is 0.65
Helen is asked two questions

Calculate the probability she answers exactly one question correctly.
### 6th April

y is directly proportional to the cube root of x.

When \( y = 100 \), \( x = 125 \).

Find \( y \) when \( x = 27 \)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is the vector \( \overrightarrow{BA} \)?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculate \( y \)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A straight line, \( L \), is perpendicular to the line with equation \( y = 4x + 3 \).

L passes through the point \((7, 3)\).

Find an equation for the straight line \( L \).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Find the exact value of \( \sin(45^\circ) + \cos(30^\circ) \)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7th April

Solve \((x + 1)(x - 2) = 40\)

Simplify \(\sqrt{10} \times \sqrt{3}\)

Simplify \((\sqrt{3})^4\)

Find \(a, x, y\) and \(z\)

A is the point \((3, 1)\).
B is the point \((a, 11)\).

The gradient of AB is \(\frac{5}{2}\).

Work out the value of \(a\).
8th April

<table>
<thead>
<tr>
<th>Work out $36^0$</th>
<th>Work out $49\frac{1}{2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A coin is flipped three times.

What is the probability of getting three tails?

<table>
<thead>
<tr>
<th>Calculate the perimeter.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

[Diagram of a triangle with sides 6 cm and 30°]

The frequency polygon shows information on how long people spend in a swimming pool.

How many people were surveyed?

<table>
<thead>
<tr>
<th>Calculate an estimate of the mean time spent in the swimming pool.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>9th April</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td><strong>Solve</strong></td>
</tr>
<tr>
<td>( \frac{5x + 2}{x - 3} + 5 = 6 )</td>
</tr>
</tbody>
</table>

| **Factorise** |
| 9\(y^2 - 49w^2\) |

| **A sector has side length 4cm.** |
| The area of the sector is 10\(cm^2\) |
| What is the size of the angle which describes the sector? |

| **Work out** |
| \( \frac{3}{4} \) |

| **Simplify** |
| \((2x^4y)^3\) |
10th April

y is inversely proportional to the cube of x. If \( y = 4 \), \( x = 2 \).

Find \( y \) when \( x = 1 \).

What is the vector \( \overrightarrow{AB} \)?

Calculate the distance \( AE \)

Simplify
\[
\frac{x^2 + 10x + 24}{x^2 - 36}
\]

Mrs Jenkins is making decorations for a wedding. She needs \( 19\sqrt{5} \) metres of ribbon in total. Mrs Jenkins has 40 metres of ribbon. Does she have enough ribbon?

© Corbettmaths 2016

www.corbettmaths.com
### 11th April

**Solve, giving your answers to one decimal place.**

\[8x^2 - 8x - 9 = 0\]

---

**Michael bought a hat and a coat.**

The hat cost £6.

He sold both items for a total of £45.

Michael made

300% profit on the hat

125% profit on the total cost.

---

**Work out his percentage profit on the cost of the coat.**

---

**A tile is selected at random, it is replaced and then another tile is selected.**

Find the probability that both tiles have a different letter on it.

---

**Calculate the length of the missing side.**

Leave your answer as a surd.

---

**Convert 0.4242424242.... into a fraction**
### 12th April

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplify $\sqrt{300}$</td>
<td></td>
</tr>
<tr>
<td>Solve $x^2 + 70 = 17x$</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagram</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="10cm" alt="Small Box" /> <img src="30cm" alt="Large Box" /></td>
<td>Shown are two boxes that are mathematically similar. The volume of the small box is 500cm$^3$. Work out the volume of the larger box.</td>
</tr>
<tr>
<td></td>
<td>What is the probability that Beth passes the test?</td>
</tr>
<tr>
<td></td>
<td>What is the probability that both Ann and Beth fail the test?</td>
</tr>
</tbody>
</table>

The probability Ann passes a test is 0.8.
The probability both Ann and Beth pass a test is 0.5.
13th April

Solve

\[ \frac{2x - 5}{7} - \frac{2x - 1}{2} = 3 \]

Write down the numbers that are in set

\[ A \cup B \]

On the grid, label the region that satisfies all three of these inequalities

\[ -1 < x < 2 \]

\[ y \leq 8 \]

\[ y \geq 4x - 4 \]

\[(x + a)^2(x - 2) = x^3 + bx^2 + 12x - 72\]

Find a and b
14th April

AB is a tangent
Find x

The force, \( F \) newtons, exerted by a magnet on a metal object is inversely proportional to the square of the distance \( d \) cm.

When \( d = 2 \) cm, \( F = 50 \) N.

(a) Express \( F \) in terms of \( d \).

(b) Find the force when the distance between the magnet and metal object is 10cm

(c) Find the distance between the magnet and metal object when the force is 8N.

Evaluate
\[ 27^{2/3} \]

Find the size of angle \( y \)

\( 21 \text{cm} \)
\( 84^\circ \)
\( 32.4 \text{cm} \)
15th April

A dice is rolled 4 times.

What is the probability of getting a number under 3, all 4 times?

Factorise $2x^2 + 5x + 2$

Draw a histogram to show this information.

<table>
<thead>
<tr>
<th>Time (t hours)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 &lt; t \leq 100$</td>
<td>24</td>
</tr>
<tr>
<td>$100 &lt; t \leq 150$</td>
<td>21</td>
</tr>
<tr>
<td>$150 &lt; t \leq 200$</td>
<td>17</td>
</tr>
<tr>
<td>$200 &lt; t \leq 350$</td>
<td>24</td>
</tr>
<tr>
<td>$350 &lt; t \leq 500$</td>
<td>9</td>
</tr>
</tbody>
</table>

A biased coin is flipped twice.

What is the probability of the coin landing on heads twice?

The probability of the coin landing on tails is 0.8
16th April

Write the following numbers in order, from smallest to largest

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$58.9 \times 10^3$</td>
<td>fifty thousand</td>
</tr>
<tr>
<td>6000</td>
<td>$5.98 \times 10^3$</td>
</tr>
</tbody>
</table>

Find $x$

Enlarge the rectangle by scale factor $-2$, using the origin as centre of enlargement.

The bearing of A from B is $065^\circ$

Find the bearing of B from A.
17th April

**Simplify $\sqrt{20}$**

Enlarge the rectangle by scale factor $-2$, using $(1, 0)$ as centre of enlargement.

A cylinder has radius 5cm and length 10cm.

A sphere has the same volume as the cylinder.

What is the radius of the sphere?

Calculate the perimeter of the triangle.
### 18th April

A is directly proportional to $B$ cubed.

When $A = 80$, $B = 2$

Find $A$ when $B = 10$

---

Dani writes down a 5 digit odd number. The number is less than 30000.

How many different possible numbers could Dani have written down?

---

Factorise

$2x^2 + 3x - 5$

---

Find $x$

Find $y$

Find $z$
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find the equation of the straight line through (0, 5) which is</td>
<td></td>
</tr>
<tr>
<td>perpendicular to the line $y = 4x + 1$</td>
<td></td>
</tr>
<tr>
<td>Convert 0.0454545454545... into a fraction</td>
<td></td>
</tr>
<tr>
<td>Simplify $\frac{x^2 - 1}{x^2 + x}$</td>
<td></td>
</tr>
<tr>
<td>The length of a song is 184.3 seconds. This time, $t$, is to the nearest</td>
<td></td>
</tr>
<tr>
<td>tenth of a second. Complete the error interval due to rounding</td>
<td>$\ldots \leq t &lt; \ldots$</td>
</tr>
<tr>
<td>Expand and simplify $(4 - x)^3$</td>
<td></td>
</tr>
</tbody>
</table>
### 20th April

<table>
<thead>
<tr>
<th>Diagram</th>
<th>Find the length of BC.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td></td>
</tr>
</tbody>
</table>

#### Solve

\[
\frac{3x + 5}{10 - x} = 1.5
\]

#### A shirt is increased in price by 20% at the start of 2014.

In the sales, in March, it is then reduced in price by 15%.

Work out the overall change in price since 2013.

- The spinner is spun twice.
  - A score is found by multiplying the two numbers together.
  - Find the probability of scoring a 4?

#### A group of scientists want to estimate the number of squirrels in a wood.

- They catch and ring 20 squirrels.
- They return the 20 squirrels to the wood.
- They then catch 50 squirrels and 13 are ringed.

Estimate the number of squirrels in the wood.
21st April

What is the sum of the interior angles of a 20-sided polygon?

Work out side length, x

Work out angle y

Write down the Sine Rule

Write down the Cosine Rule

On the grid, label the region that satisfies all three of these inequalities:

\[ x < 2 \quad y > -1 \quad y < x \]
## 22nd April

**Expand and simplify**

\[(x + 3)(x + 2)(x + 1)\]

---

Jenna asked 50 people which fizzy drink they liked from Coca-Cola, Pepsi and Fanta.

37 people liked at least one of the drinks
7 people liked all three drinks
5 people liked Pepsi and Coca-Cola but not Fanta.
36 people liked Fanta or Coca-Cola.
29 people liked Pepsi or Fanta.
25 people liked Coca-Cola.
23 people liked Fanta.
9 people only liked Fanta

Jenna picks one person at random from the 50 people.

**Work out the probability that this person likes Pepsi.**

**Given that the person selected likes Pepsi, find the probability that this person likes neither Fanta and Coca-Cola.**

---

ABC is a straight line.
A has coordinates (1, −3)
C has coordinates (13, 6)
AB:BC is 1:2

Find the coordinates of point B

---

Convert **0.4515151...** to a fraction.
Give your answer in its simplest form.
### 23rd April

<table>
<thead>
<tr>
<th>Write down the value of:</th>
<th>Write down the value of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 $\frac{2}{3}$</td>
<td>$8^{-2}$</td>
</tr>
</tbody>
</table>

### Geometry

1. **Prove this triangle is right-angled.**
   - Given: $80^\circ$, $110^\circ$, $x$, $y$.
   - Use the fact that the sum of angles in a quadrilateral is $360^\circ$.

2. **Find $y$.**
   - Given: $15\text{cm}$, $6\text{cm}$, $5\text{cm}$. Use the Pythagorean theorem.

### Word Problem

At a cafe, a coffee costs £x and a tea costs £y.

If
- 6 coffees and 7 teas cost £22
- 8 coffees and 9 teas cost £29

Find the cost of a coffee and the cost of a tea.
24th April

Find x

Find the gradients of Line A and Line B

Are the lines A and B perpendicular? Explain your answer.

a, b and c are three integers.

a is 4 less than c
b is 4 more than c

Prove \( ab + 16 = c^2 \)

Make \( y \) the subject of

\[
w = \frac{5 - y}{y + 8}
\]
### 25th April

<table>
<thead>
<tr>
<th>Solve $5x^2 - 11x - 4 = 0$ using the quadratic formula.</th>
</tr>
</thead>
</table>
| **Anthony measured the length and width of a rectangle.**
He measured the length to be 18cm correct to the nearest centimetre.
He measured the width to be 10cm correct to the nearest 10 centimetres. |
| **Calculate the lower bound for the area of this rectangle.** |
| **Match each graph to the correct relationship.**

- $y = \frac{1}{x}$
- $y = \sqrt{x}$
- $y = x$

<table>
<thead>
<tr>
<th>Simplify $\sqrt{18}$</th>
</tr>
</thead>
</table>
| **Find the exact value of**
$\sin(90^\circ) + \cos(60^\circ)$ |

© Corbettmaths 2016

www.corbettmaths.com
<table>
<thead>
<tr>
<th>Date</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>26th April</td>
<td><strong>Natalie is asked by her teacher to write 203,450 in standard form.</strong> Explain why Natalie is wrong.</td>
</tr>
<tr>
<td></td>
<td>Natalie writes $20.3 \times 10^4$</td>
</tr>
<tr>
<td></td>
<td><strong>Calculate the length of the missing side.</strong></td>
</tr>
<tr>
<td></td>
<td>![Triangle Diagram]</td>
</tr>
<tr>
<td></td>
<td>A cube has side length 9cm. A sphere has radius $r$. The cube and sphere have the same volume. Calculate $r$.</td>
</tr>
<tr>
<td></td>
<td>Here are the fifth and sixth terms of a Fibonacci-type sequence. 17 26 Find the first term of the sequence.</td>
</tr>
<tr>
<td></td>
<td>Here are the first and third terms of a different Fibonacci-type sequence $d$ e __ __ __ __ Work out an expression in terms of $d$ and $e$ for the sixth term</td>
</tr>
</tbody>
</table>
27th April

Solve

\[ 2y^2 - y = 15 \]

Calculate the length of the hypotenuse. Give your answer as a surd.

![Diagram with \( \sqrt{7} \) and \( \sqrt{5} \)]

Shown are the reaction times of two groups of people.

Compare the distributions.

Reaction Times - Group A

![Box plot for Group A]

Reaction Times - Group B

![Box plot for Group B]

In the sales, a CD player costs £64 from Electrics’R’Us and the same CD player costs £64.60 from Music World.

Which shop has the cheapest normal price?

Electrics’R’Us

\( \frac{1}{5} \) off normal price

Music World

15% off normal price

© Corbettmaths 2016

www.corbettmaths.com
### 28th April

**Problem 1:**

**Diagram:**

- DEFG is a parallelogram
- EH = EF

**Question:**

Find x

**Solution:**

- In parallelogram DEFG, opposite angles are equal. Therefore, angle DGE is equal to angle HFG.
- Since EH = EF, triangle EFG is isosceles, and angles EGF and EFG are equal.
- Using the given angles and properties of parallelograms and isosceles triangles, we can find the value of x.

**Calculation:**

- \(\angle DGE = \angle HFG\)
- \(\angle EGF = \angle EFG\)
- \(\angle GEF = 180° - \angle DGE - \angle EGF\)
- \(\angle HFG = 180° - \angle EFG - \angle HFG\)
- \(x = \angle HFG = 180° - \angle DGE - \angle EGF\)

**Note:**

- Use the properties of parallelograms and isosceles triangles to find the exact value of x.

---

**Problem 2:**

**Route 1:**

- 52 miles at 60mph

**Route 2:**

- 43 miles at 50mph

**Question:**

Which Route is faster and by how much?

**Solution:**

- Time taken for Route 1: \(\frac{52}{60}\) hours
- Time taken for Route 2: \(\frac{43}{50}\) hours

**Comparison:**

- \(\frac{52}{60} - \frac{43}{50}\)
- Simplify and find the difference.

**Result:**

- Route 2 is faster by a certain amount.

---

**Problem 3:**

**Diagram:**

- Shown is a cube.

**Question:**

Calculate length AG.

**Solution:**

- In a cube, all edges are equal. The length AG is the diagonal across one face of the cube.
- Using the Pythagorean theorem in three dimensions, we have
  \[AG^2 = AD^2 + DG^2\]
- \(AD = DG = 4\) cm (since it's a cube)
- \(AG^2 = 4^2 + 4^2\)
- \(AG = 4\sqrt{2}\) cm

**Result:**

- Length AG is \(4\sqrt{2}\) cm.

---

**Problem 4:**

Factorise \(8y^2 + 10y - 3\)

**Solution:**

- Using the quadratic formula or factoring, we can find two numbers that multiply to \(-24\) (the product of the constant term and the coefficient of \(y^2\)) and add to \(10\) (the coefficient of \(y\)).
- The factors are \(2\) and \(-12\).

**Result:**

- \(8y^2 + 10y - 3 = (2y - 1)(4y + 3)\)

---

**Problem 5:**

Write the numbers 2, 3, 4 and 5 into the boxes to give smallest possible answer.

**Diagram:**

- \(\frac{\square}{7} \times \frac{\square}{\square}\)

**Solution:**

- To minimize the product, we should multiply the largest number by the smallest one and the largest number by the second largest one.
- \(\frac{5}{7} \times \frac{4}{3}\)

**Result:**

- Smallest possible answer is \(\frac{20}{21}\).

---

© Corbettmaths 2016  
www.corbettmaths.com
<table>
<thead>
<tr>
<th>29th April</th>
<th>Find x</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td>The cost of a trip, c, varies directly to the square root of the number of miles, m.</td>
</tr>
<tr>
<td>The cost of a 100 mile trip is £50.</td>
<td>What is the cost of a 400 mile trip?</td>
</tr>
<tr>
<td>Two ordinary fair dice are rolled.</td>
<td>Work out the probability that at least one of the dice does not land on a 1.</td>
</tr>
<tr>
<td>Write down the exact value of ( \sin 45^\circ )</td>
<td>Write down the exact value of ( \tan 45^\circ )</td>
</tr>
<tr>
<td>Solve ( y^2 + 9y + 2 = 8y + 58 )</td>
<td></td>
</tr>
</tbody>
</table>

© Corbettmaths 2016

www.corbettmaths.com
30th April

Teddy leaves home at 13:00
He drives at an average speed of 60km/h for 2½ hours
Teddy stops for 30 minutes.
He then drives home at an average speed of 50km/h

A film starts at 18:45
Does Teddy get home in time for the start?
Explain your answer.

Sketch

\[ y = x^3 + 1 \]

Make x the subject of \( p = 3(y + 2x)^2 \)