

Week 1

This week in a nutshell:

The commencement of this half term sees the introduction of some of the more challenging topics. These have been done in an accessible way that encourages understanding of the fundamentals, along with developing fluency in application. There may well be lots of opportunity for discussion after each set of questions, and at this point in the year, this is highly advisable.

Question 1: Vector notation

Question 2: Mutually exclusive events

Question 3: Labelling triangles

Question 4: Graphical solutions to equations

Question 5: Pythagoras' Theorem

The questions aim to develop and deepen understanding over the week. Due to the necessity of the topics covered this week, there is an emphasis on the interchangeability of command words, and language flexibility. It may be worth taking some extra time this week to make sure your students are developing their mathematical literacy.

This week's ideas for class discussion include:

Question 1: **Vector notation**

- Why do you think we use this notation for vectors?
- Can you suggest other ways we could write the information contained in a vector?

Question 2: **Mutually exclusive events**

- How would you describe mutually exclusive events in your own words?

Question 3: **Labelling triangles**

- Why is it important to be clear about how a triangle is labelled?

Question 4: **Graphical solutions to equations**

- Are there always solutions to simultaneous equations? How do graphs help us determine the number of solutions?

Question 5: **Pythagoras' Theorem**

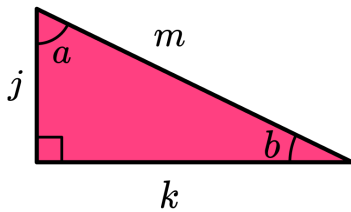
- How many integer solutions to the Pythagorean Theorem can you find?

Week 1: Day 1

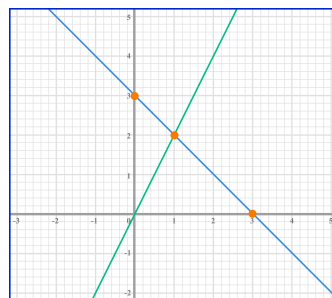
- 1) Write the column vector that describes the movement “4 units to the right, 2 units up”.

- 2) When rolling a 6-sided die, what is the probability of scoring a 1 or a 2?

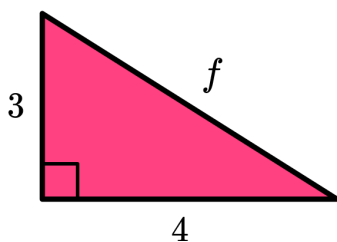
- 3) Which side is the hypotenuse?



- 4) Identify the point of intersection of the given linear functions.



- 5) Use Pythagoras' Theorem to work out the length of side f .



Week 1: Day 1 Answers

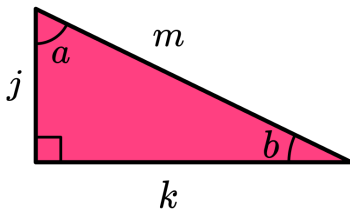
- 1) Write the column vector that describes the movement “4 units to the right, 2 units up”.

$$\begin{pmatrix} 4 \\ 2 \end{pmatrix}$$

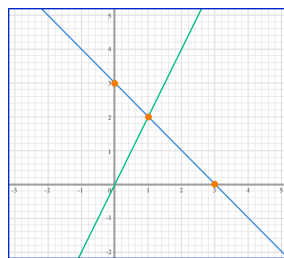
- 2) When rolling a 6-sided die, what is the probability of scoring a 1 or a 2?

$$\frac{2}{6} \text{ or } \frac{1}{3}$$

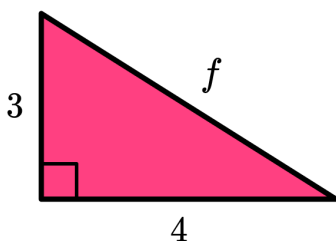
- 3) Which side is the hypotenuse? *m*



- 4) Identify the point of intersection of the given linear functions. **(1,2)**



- 5) Use Pythagoras' Theorem to work out the length of side *f*. **5**

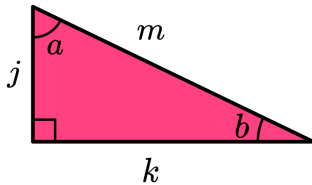


Week 1: Day 2

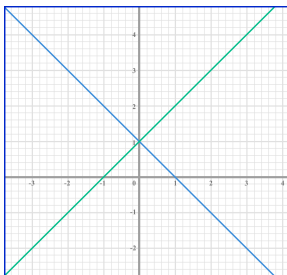
- 1) Write the column vector that describes the movement “2 units to the left, 7 units down”.

- 2) When drawing a card from a standard deck of playing cards, what is the probability of getting a red queen or the ace of spades?

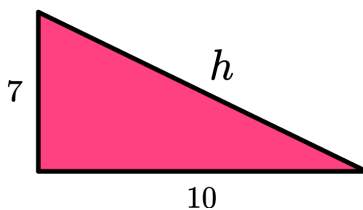
- 3) Which side is opposite angle a ?



- 4) Identify the point of intersection of the given linear functions.



- 5) Use Pythagoras' Theorem to work out the length of side h .



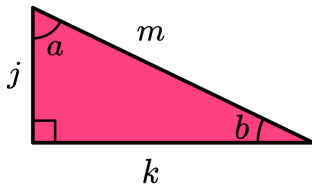
Week 1: Day 2 Answers

- 1) Write the column vector that describes the movement “2 units to the left, 7 units down”.

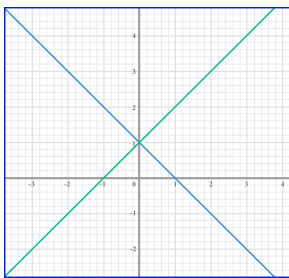
$$\begin{pmatrix} -2 \\ -7 \end{pmatrix}$$

- 2) When drawing a card from a standard deck of playing cards, what is the probability of getting a red queen or the ace of spades? $\frac{3}{52}$

- 3) Which side is opposite angle a ? k

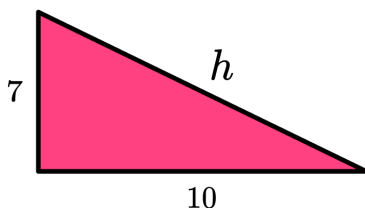


- 4) Identify the point of intersection of the given linear functions.



$(0,1)$

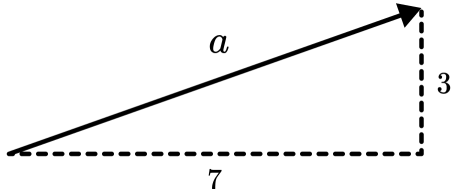
- 5) Use Pythagoras' Theorem to work out the length of side h .



12.21 (2dp)

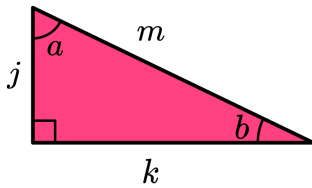
Week 1: Day 3

- 1) Write vector a as a column vector.

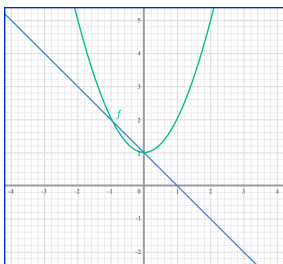


- 2) A bag contains 2 red tiles, 7 blue tiles, and 6 green tiles. When picking a tile at random, what is the probability of getting a red or blue tile?

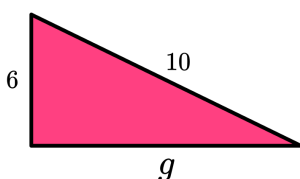
- 3) Which side is adjacent to angle b ?



- 4) Identify the points of intersection of the given functions.

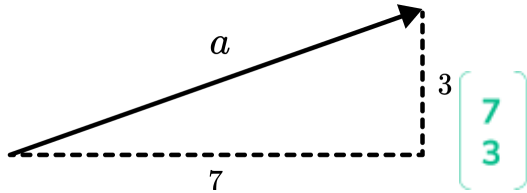


- 5) Use Pythagoras' Theorem to work out the length of side g .



Week 1: Day 3 Answers

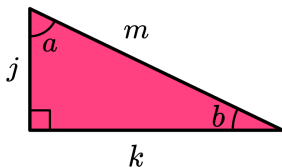
- 1) Write vector a as a column vector.



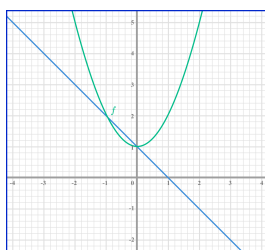
- 2) A bag contains 2 red tiles, 7 blue tiles, and 6 green tiles. When picking a tile at random, what is the probability of getting a red or blue tile?

$$\frac{9}{15} \text{ or } \frac{3}{5}$$

- 3) Which side is adjacent to angle b ? k

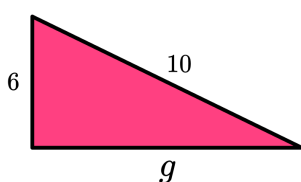


- 4) Identify the points of intersection of the given functions.



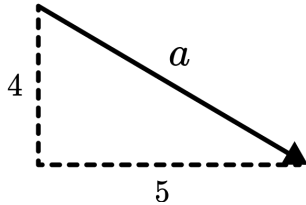
$(-1, 2)$ $(0, 1)$

- 5) Use Pythagoras' Theorem to work out the length of side g . 8



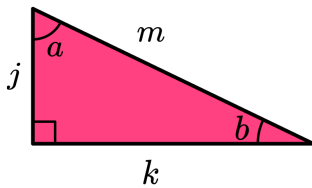
Week 1: Day 4

- 1) Write vector a as a column vector.

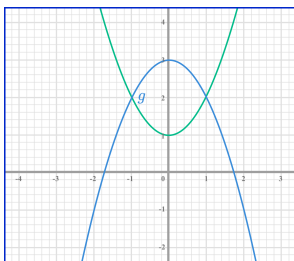


- 2) A bag of sweets contains 15 fudges, 12 toffees, and 18 nougats. What is the probability of not choosing a fudge?

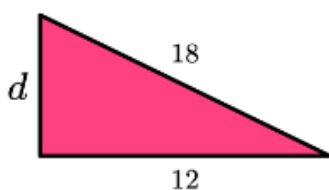
- 3) Angle a is opposite which side?



- 4) Identify the points of intersection of the given functions.

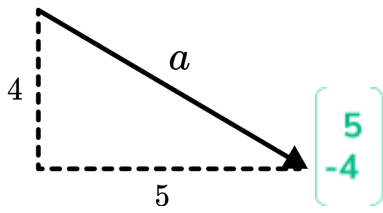


- 5) Use Pythagoras' Theorem to work out the length of side d .



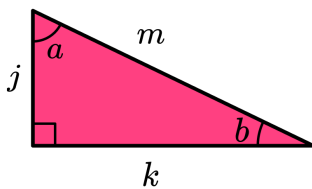
Week 1: Day 4 Answers

- 1) Write vector a as a column vector.

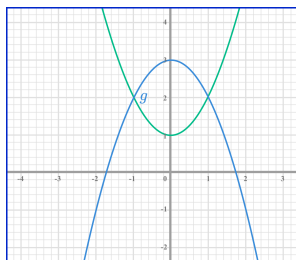


- 2) A bag of sweets contains 15 fudges, 12 toffees, and 18 nougats. What is the probability of not choosing a fudge? $\frac{30}{45}$ or $\frac{2}{3}$

- 3) Angle a is opposite which side? k

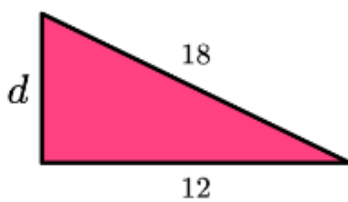


- 4) Identify the points of intersection of the given functions.



$(-1, 2)$ $(1, 2)$

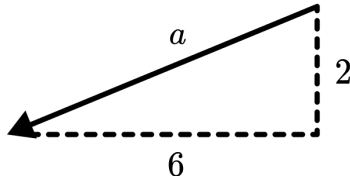
- 5) Use Pythagoras' Theorem to work out the length of side d .



13.42 (2dp)

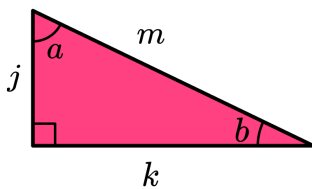
Week 1: Day 5

- 1) Write vector a as a column vector.

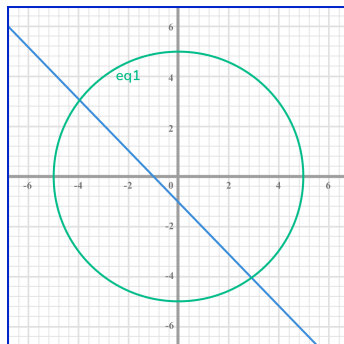


- 2) A bag of sweets contains 13 fudges, 11 toffees, 10 chocolates and 14 nougats. What is the probability of choosing a fudge or a toffee?

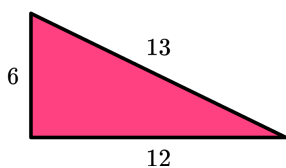
- 3) Which side is adjacent to angle a ?



- 4) Identify the points of intersection of the given functions.



- 5) Use Pythagoras' Theorem to determine if this is a right-angled triangle.



Week 1: Day 5 Answers

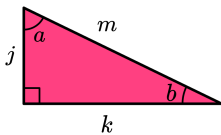
- 1) Write vector a as a column vector.

$$\begin{bmatrix} -6 \\ -2 \end{bmatrix}$$

- 2) A bag of sweets contains 13 fudges, 11 toffees, 10 chocolates and 14 nougats. What is the probability of choosing a fudge or a toffee?

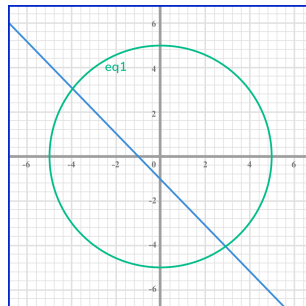
$$\frac{24}{48} \text{ or } \frac{1}{2}$$

- 3) Which side is adjacent to angle a ? j

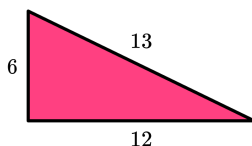


- 4) Identify the point of intersection of the given linear functions.

$$(-4,3) \quad (3,-4)$$



- 5) Use Pythagoras' Theorem to determine if this is a right-angled triangle.



$$12^2 + 6^2 \neq 13^2. \text{ No}$$

Do you have KS4 students who need additional support in maths?

Our specialist tutors will help them develop the skills they need to succeed at GCSE in weekly one to one online revision lessons. Trusted by secondary schools across the UK. Visit thirdspacelearning.com to find out more.

