

## Week 12

### **This week in a nutshell:**

Week 6 concludes the half term by continuing to build fluency with the topics generally seen towards the upper end of the specification. The questions here are accessible and are designed to help students with their exam preparation.

**Question 1:** Proportional reasoning

**Question 2:** Money

**Question 3:** Roots of equations

**Question 4:** Vectors

**Question 5:** Triangles

There are no suggestions for discussion this half term. As the topics are revision of previously covered material, any conversations should be used to deal with remaining difficulties or misconceptions that arise during the week.

## Week 12: Day 1

1) Share 84 in the ratio 3:4

---

2) List the coins that have a lower value than £1.

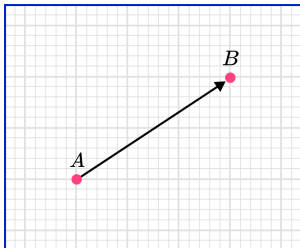
---

3) Determine the roots of

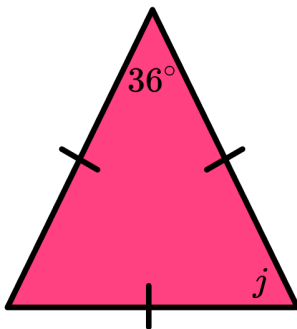
$$x(x - 3) = 0$$

---

4) Write the vector  $AB$  as a column vector.



5) Determine the size of angle  $j$ .



## Week 12: Day 1 Answers

1) Share 84 in the ratio 3:4 **36 and 48**

---

2) List the coins that have a lower value than £1. **1p, 2p, 5p, 10p, 20p, 50p**

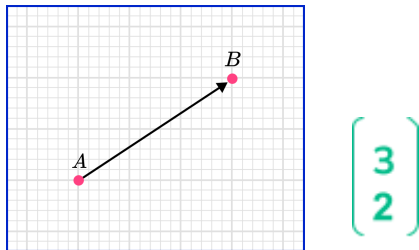
---

3) Determine the roots of

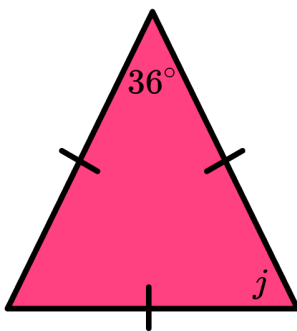
$$x(x - 3) = 0 \quad \mathbf{0 \text{ and } 3}$$

---

4) Write the vector AB as a column vector.



5) Determine the size of angle  $j$ .  **$72^\circ$**



## Week 12: Day 2

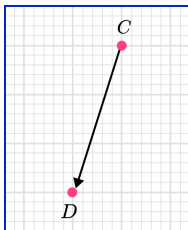
- 1) 3 pencils costs £1.20. How much does it cost to buy 5 pencils?
- 
- 2) I have four coins, the coins are worth 37p. What four coins do I have?
- 

- 3) Determine the roots of the equation

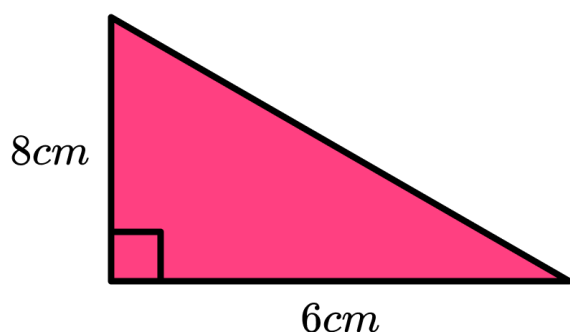
$$(x + 4)(x - 7) = 0$$

---

- 4) Write the vector  $\overrightarrow{CD}$  as a column vector.



- 5) Calculate the length of the hypotenuse in this right-angled triangle.



## Week 12: Day 2 Answers

- 1) 3 pencils costs £1.20. How much does it cost to buy 5 pencils? **£2**
- 

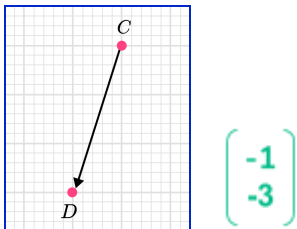
- 2) I have four coins, the coins are worth 37p. What four coins do I have?  
**20p, 10p, 5p, 2p**
- 

- 3) Determine the roots of the equation

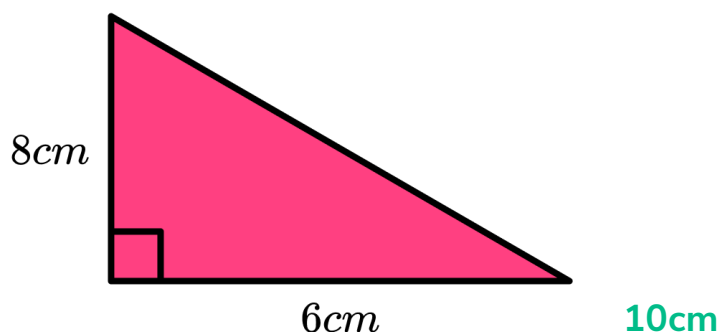
$$(x + 4)(x - 7) = 0 \quad \textbf{-4 and 7}$$

---

- 4) Write the vector  $\overrightarrow{CD}$  as a column vector.



- 5) Calculate the length of the hypotenuse in this right-angled triangle.



## Week 12: Day 3

1) 8 colas costs £6. How much do 3 colas cost?

---

2) I spend £2.47. How much change do I get from a £10 note?

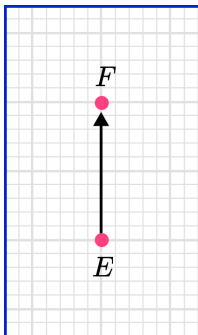
---

3) Determine the roots of the equation

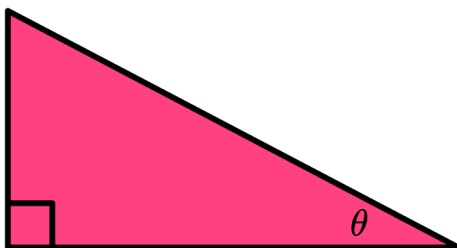
$$x^2 - 36 = 0$$

---

4) Write the vector  $\vec{EF}$  as a column vector.



5) Label the sides adjacent and opposite to angle  $\theta$ .



## Week 12: Day 3 Answers

- 1) 8 colas costs £6. How much do 3 colas cost? **£2.25**
- 

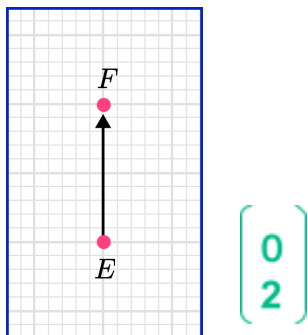
- 2) I spend £2.47. How much change do I get from a £10 note? **£7.53**
- 

- 3) Determine the roots of the equation

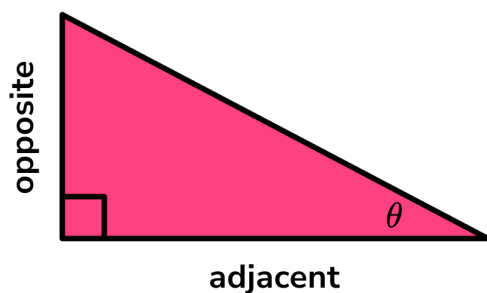
$$x^2 - 36 = 0 \quad \text{-6 and 6}$$

---

- 4) Write the vector EF as a column vector.



- 5) Label the sides adjacent and opposite to angle  $\theta$ .



## Week 12: Day 4

- 1) A flight of stairs is 3m high. If you have climbed 27m, how many flights of stairs have you walked up?
- 

- 2) A coffee costs £3.35. I have £10. Do I have enough money to buy 3 coffees?
- 

- 3) Determine the roots of the equation

$$x^2 - 9x + 20 = 0$$

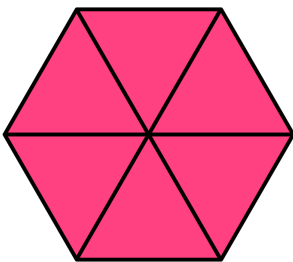
---

- 4) If we have the vectors  $\mathbf{a} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$  and  $\mathbf{b} = \begin{pmatrix} -3 \\ 2 \end{pmatrix}$

determine the resultant vector  $\mathbf{c}$ , given that  $\mathbf{c} = \mathbf{a} - \mathbf{b}$

---

- 5) This is a regular hexagon. State 2 properties of the triangles that tessellate to form this hexagon.



## Week 12: Day 4 Answers

- 1) A flight of stairs is 3m high. If you have climbed 27m, how many flights of stairs have you walked up? **9**
- 

- 2) A coffee costs £3.35. I have £10. Do I have enough money to buy 3 coffees? **No, 5p short**
- 

- 3) Determine the roots of the equation

$$x^2 - 9x + 20 = 0 \quad \mathbf{4 \text{ and } 5}$$

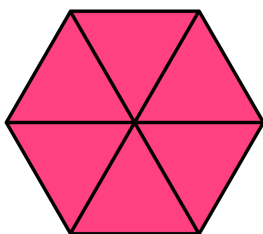
---

- 4) If we have the vectors  $\mathbf{a} = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$  and  $\mathbf{b} = \begin{pmatrix} -3 \\ 2 \end{pmatrix}$

determine the resultant vector  $\mathbf{c}$ , given that  $\mathbf{c} = \mathbf{a} - \mathbf{b}$   $\begin{pmatrix} 7 \\ -3 \end{pmatrix}$

---

- 5) This is a regular hexagon. State 2 properties of the triangles that tessellate to form this hexagon.



**All sides equal. All angles equal (angles 60°)**

## Week 12: Day 5

1) Express this ratio using integers: 1.5 : 3.25

---

2) A donut costs £1.40. How many donuts can I buy if I have £20?

---

3) Determine the roots of the equation

$$x^2 + 18x + 81 = 0$$

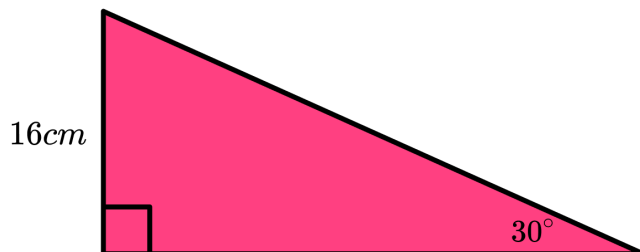
---

4) If we have the vectors  $\mathbf{a} = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$  and  $\mathbf{b} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$

determine the resultant vector  $\mathbf{c}$ , given that  $\mathbf{c} = 2\mathbf{a} + \mathbf{b}$

---

5) Calculate the length of the hypotenuse.



## Week 12: Day 5 Answers

1) Express this ratio using integers:  $1.5 : 3.25$   **$6 : 13$**

---

2) A donut costs £1.40. How many donuts can I buy if I have £20? **14**

---

3) Determine the roots of the equation

$$x^2 + 18x + 81 = 0 \quad \textbf{-9 (repeated)}$$

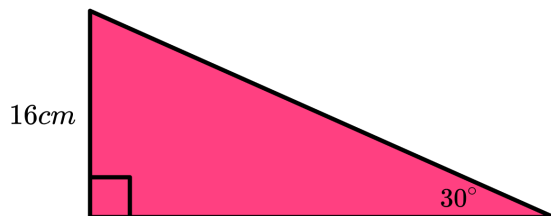
---

4) If we have the vectors  $\mathbf{a} = \begin{pmatrix} -1 \\ -2 \end{pmatrix}$  and  $\mathbf{b} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$

determine the resultant vector  $\mathbf{c}$ , given that  $\mathbf{c} = 2\mathbf{a} + \mathbf{b}$   **$\begin{pmatrix} 1 \\ 0 \end{pmatrix}$**

---

5) Calculate the length of the hypotenuse. **32cm**



*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](https://thirdspacelearning.com) to find out more.