

## Week 4

### This week in a nutshell:

This week is a mixture of method based questions requiring strict accuracy, along with questions based on the abstract. The questions on special graphs and comparing distributions make excellent discussion starters, both in terms of understanding the concepts and how to present an answer.

**Question 1:** Factorising quadratics

**Question 2:** Probability of independent events

**Question 3:** Special graphs

**Question 4:** Comparing distributions

**Question 5:** Arc lengths and sectors

### This week's ideas for class discussion include:

Question 1: **Factorising quadratics**

- Why do we need to factorise quadratics?

Question 2: **Probability of independent events**

- How do you decide if the events you are looking at actually are independent?

Question 3: **Special graphs**

- Why might the properties of special types of graph be important to recognise?
- Can you think of phenomena that are represented by each type of graph?

Question 4: **Comparing distributions**

- Which do you think is more important: analysing one distribution, or comparing distributions? Why?

Question 5: **Arc lengths and sectors**

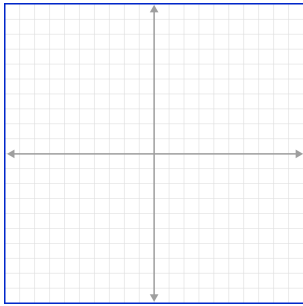
- How do YOU remember the difference for length/area formulas in circles?

## Week 4: Day 1

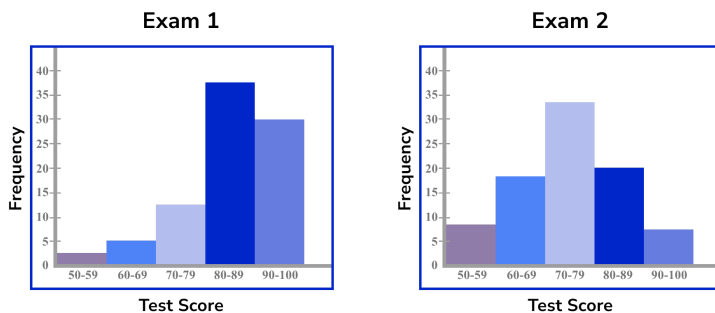
1) Factorise  $x^2 + 5x + 6$

2) A coin is tossed and a die is rolled. What is the probability of getting a head on the coin and a 6 on the die?

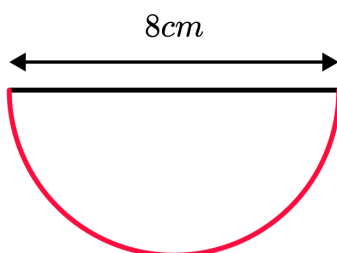
3) Sketch an example of a linear function on the axes.



4) In which test did students perform better?



5) Calculate the length of the arc shown in red.

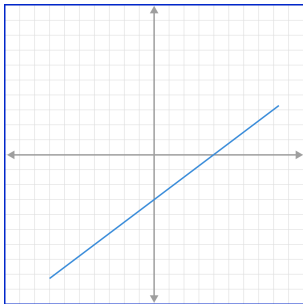


## Week 4: Day 1 Answers

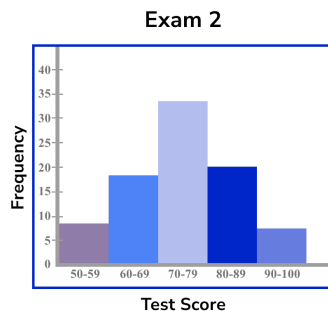
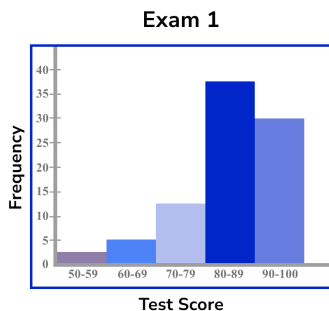
1) Factorise  $x^2 + 5x + 6 = (x + 2)(x + 3)$

2) A coin is tossed and a die is rolled. What is the probability of getting a head on the coin and a 6 on the die?  $\frac{1}{12}$

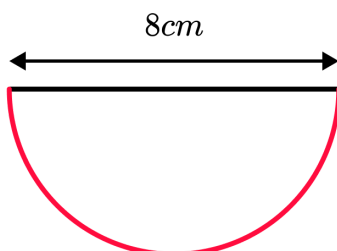
3) Sketch an example of a linear function on the axes. **Any straight line**



4) In which test did students perform better? **Exam 1**



5) Calculate the length of the arc shown in red. **12.57cm (2dp)**

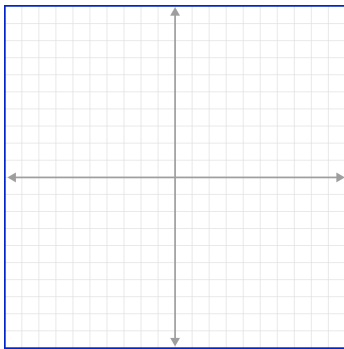


## Week 4: Day 2

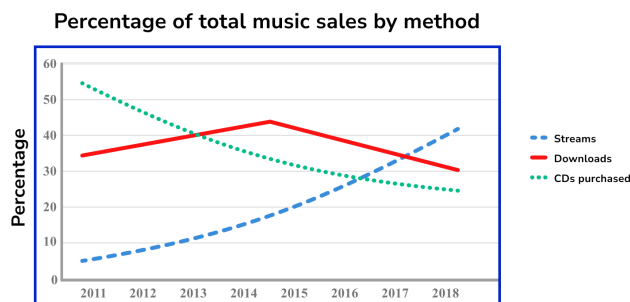
1) Factorise  $x^2 + 2x - 35$

2) A six-sided die has the numbers 1, 1, 2, 2, 4 and 6 on its faces. The die is rolled twice. What is the probability of scoring a 2 twice?

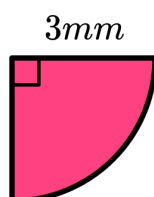
3) Sketch an example of a quadratic function on the axes.



4) How does the number of CDs purchased change as the number of streams increases?



5) Calculate the area of the sector.



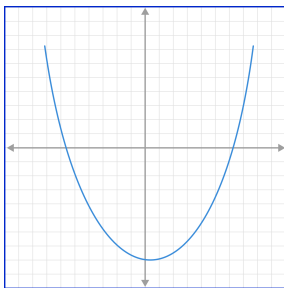
## Week 4: Day 2

1) Factorise  $x^2 + 2x - 35 = (x + 7)(x - 5)$

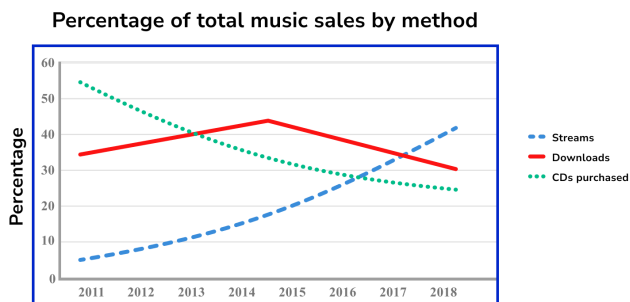
2) A six-sided die has the numbers 1, 1, 2, 2, 4 and 6 on its faces. The die is rolled twice. What is the probability of scoring a 2 twice?  $\frac{1}{9}$

3) Sketch an example of a quadratic function on the axes.

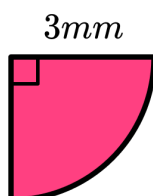
Any U or  $\cap$  shaped function



4) How does the number of CDs purchased change as the number of streams increases? Decreases



5) Calculate the area of the sector.  $7.07\text{mm}^2$  (2dp)

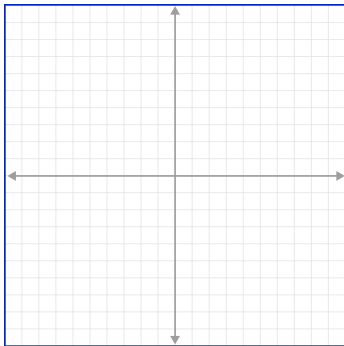


## Week 4: Day 3

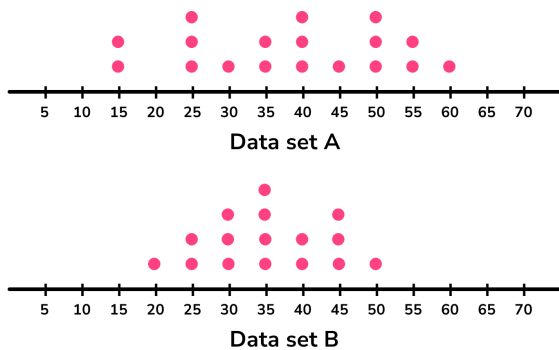
1) Factorise  $x^2 - 11x + 18$

2) A coin is biased so that the probability of heads  $P(H) = 0.3$  and the probability of tails  $P(T) = 0.7$ . The coin is flipped twice. What is the probability of getting tails both times?

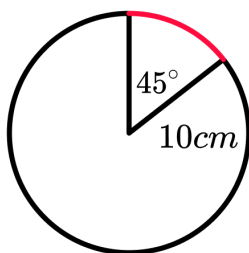
3) Sketch an example of a cubic function on the axes.



4) Which data set shows greater consistency?



5) Calculate the length of the arc shown in red.

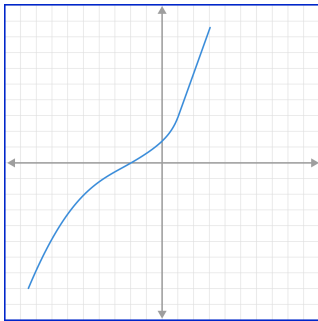


## Week 4: Day 3 Answers

1) Factorise  $x^2 - 11x + 18 = (x - 9)(x - 2)$

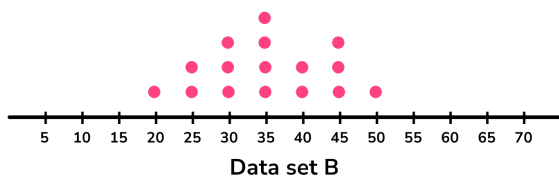
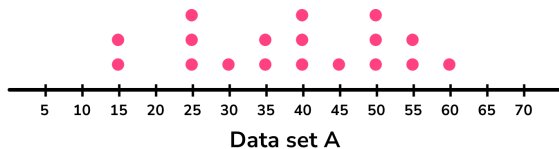
- 2) A coin is biased so that the probability of heads  $P(H) = 0.3$  and the probability of tails  $P(T) = 0.7$ . The coin is flipped twice. What is the probability of getting tails both times? **0.49**

- 3) Sketch an example of a cubic function on the axes.

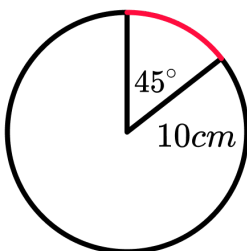


or  shape

- 4) Which data set shows greater consistency? **Data set B**



- 5) Calculate the length of the arc shown in red. **7.85cm (2dp)**

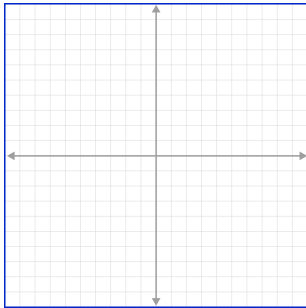


## Week 4: Day 4

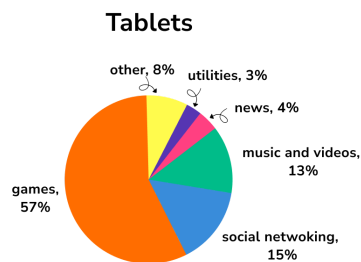
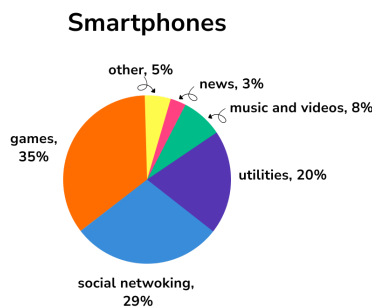
1) Factorise  $x^2 - 81$

2) A coin has been weighted, so  $P(\text{head})=0.6$  and  $P(\text{tail})=0.4$ . The coin is thrown twice. What is the probability of getting the same face both times?

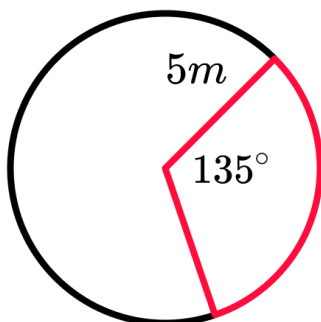
3) Sketch an example of a reciprocal function on the axes.



5) Which device is used more for social networking?



5) Calculate the area of the sector outlined in red.

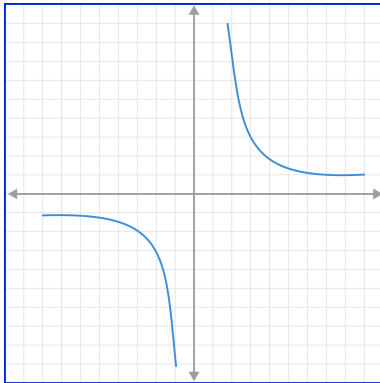


## Week 4: Day 4 Answers

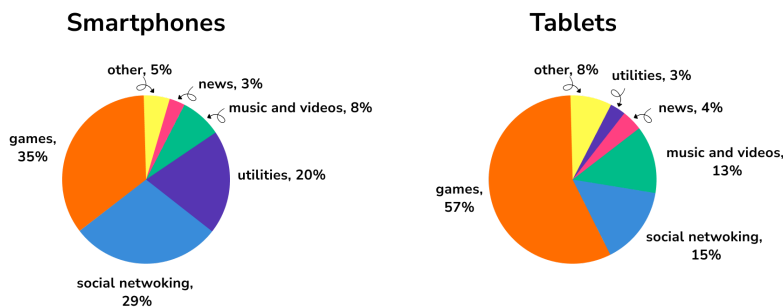
1) Factorise  $x^2 - 81 = (x + 9)(x - 9)$

2) A coin has been weighted, so that  $P(\text{head})=0.6$  and  $P(\text{tail})=0.4$ . The coin is thrown twice. What is the probability of getting the same face both times? **0.52**

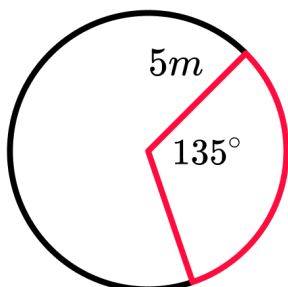
3) Sketch an example of a reciprocal function on the axes.



5) Which device is used more for social networking? **Smartphone**



5) Calculate the area of the sector outlined in red.  **$29.45\text{m}^2$  (2dp)**

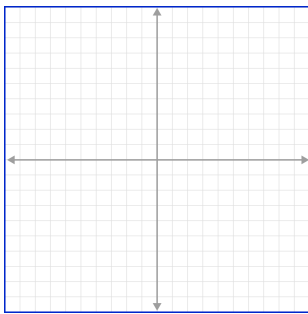


## Week 4: Day 5

1) Factorise  $2x^2 + 11x + 12$

2) A 6-sided die is rolled and two coins are tossed. What is the probability of getting an even number on the die and heads on both coins?

3) Sketch an example of an exponential function on the axes.

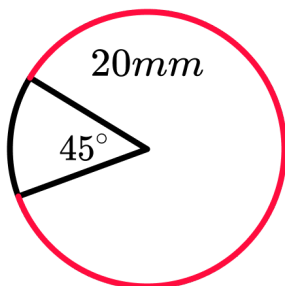


4) Which class had the highest median score?

Class A	Stem	Class B
9 8 8	0	2 3 4
8 8 7	1	6 9
6 6 5 3	2	4 6 7 8
6 5 1 1 0	3	0 0 4
9 5 1 0	4	0 0 5 9

Key: 1 | 7 = 17

5) Calculate the length of the arc shown in red.

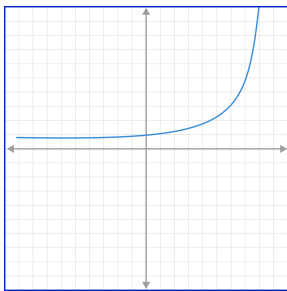


## Week 4: Day 5 Answers

1) Factorise  $2x^2 + 11x + 12 = (2x + 3)(x + 4)$

2) A 6-sided die is rolled and two coins are tossed. What is the probability of getting an even number on the die and heads on both coins?  $\frac{1}{8}$

3) Sketch an example of an exponential function on the axes.

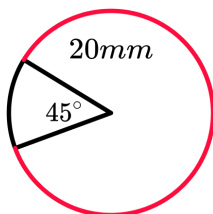


4) Which class had the highest median score? **Class B**

Class A	Stem	Class B
9 8 8	0	2 3 4
8 8 7	1	6 9
6 6 5 3	2	4 6 7 8
6 5 1 1 0	3	0 0 4
9 5 1 0	4	0 0 5 9

Key: 1 | 7 = 17

5) Calculate the length of the arc shown in red. **109.96mm (2dp)**



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