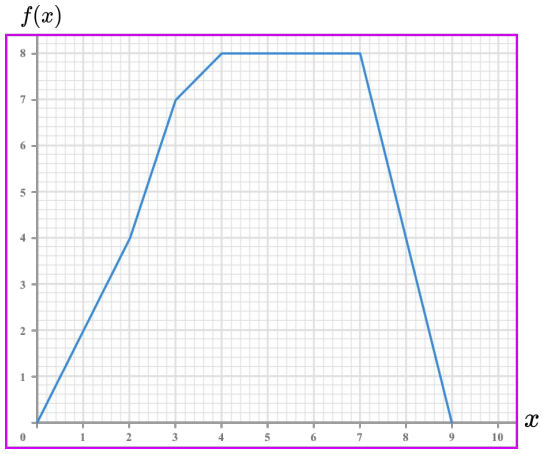
THIRD SPACE LEARNING

GCSE Exam Questions

Rates of Change | Ratio & Proportion

GCSE Exam Questions: Rates of Change

1) Use the graph $y = f(x)$ to answer the following questions:



(a) What is the instantaneous rate of change at $x = 1$?

(2)

(b) What is the instantaneous rate of change at $x = 3.5$?

(2)

(c) What is the instantaneous rate of change at $x = 5$?

(2)

(d) What is the instantaneous rate of change at $x = 8$?

(2)

(e) What is the average rate of change between $x = 2$ and $x = 7$?

(2)

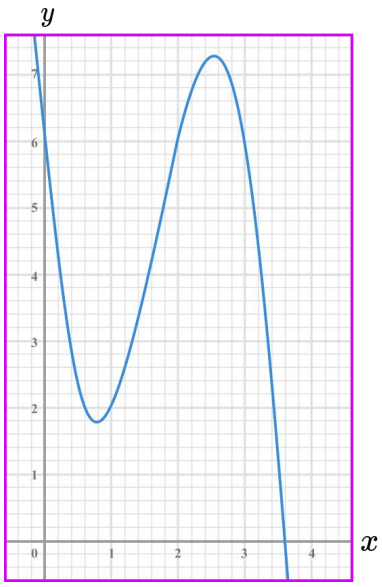
(f) Between what values of x does the function have a rate of change of 0?

(1)

(11 marks)

GCSE Exam Questions: Rates of Change

2) Use the graph $y = f(x)$ to answer the following questions:



(a) What is the instantaneous rate of change at $x = 1$?

(2)

(b) What is the instantaneous rate of change at $x = 3$?

(2)

(c) At how many points does the function have a rate of change of zero?

(1)

(d) At what points does the function have a rate of change of zero?

(3)

(e) What is the average rate of change between $x = 0$ and 1?

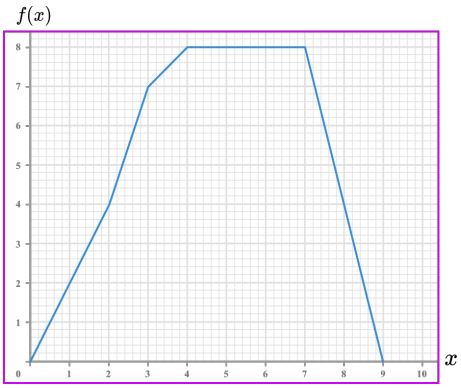
(2)

(f) State the range of values for x where the graph has a negative rate of change.

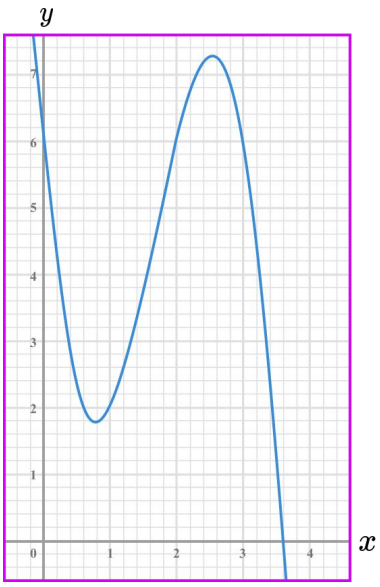
(2)

(12 marks)

GCSE Exam Questions: Rates of Change Answers

	Question	Answer	Marks
1)	Use the graph $y = f(x)$ to answer the following questions:  		
(a)	What is the instantaneous rate of change at $x = 1$?	**(a)** Attempt to calculate the gradient at the point $x = 1$ 2	**(1)** **(1)**
(b)	What is the instantaneous rate of change at $x = 3.5$?	**(b)** Attempt to calculate the gradient at the point $x = 3.5$ 1	**(1)** **(1)**
(c)	What is the instantaneous rate of change at $x = 5$?	**(c)** Attempt to calculate the gradient at the point $x = 5$ 0	**(1)** **(1)**
(d)	What is the instantaneous rate of change at $x = 8$	**(d)** Attempt to calculate the gradient at the point $x = 8$ - 4	**(1)** **(1)**
(e)	What is the average rate of change between $x = 2$ and $x = 7$?	**(e)** Attempt to calculate the gradient between he points (2,4) and (7,8) 0.8	**(1)** **(1)**
(f)	Between what values of x does the function have a rate of change of 0?	**(f)** $4 < x < 7$ *Accept "between 4 and 7"*	**(1)**

GCSE Exam Questions: Rates of Change Answers

	Question	Answer	Marks
2)	Use the graph $y = f(x)$ to answer the following questions:  		
(a)	What is the instantaneous rate of change at $x = 1$?	**(a)** Attempt to calculate the gradient at the point $x = 1$ by drawing a tangent 1.7 ± 0.5	**(1)** **(1)**
(b)	What is the instantaneous rate of change at $x = 3$?	**(b)** Attempt to calculate the gradient at the point by drawing a tangent at $x = 3$ -5 ± 1	**(1)** **(1)**
(c)	At how many points does the function have a rate of change of zero?	**(c)** 2	**(1)**
(d)	At what points does the function have a rate of change of zero?	**(d)** $(x, 1.8)$ **or** $(0.8, y)$ **or** $(x,7.3)$ **or** $(2.5,y)$ $(0.8, 1.8)$ **or** $(2.5,7.3)$ $(0.8, 1.8)$ **and** $(2.5,7.3)$ *Accept any value of x or y within the range* ± 0.2	**(1)** **(1)** **(1)**
(e)	What is the average rate of change between $x = 0$ and 1	**(e)** Attempt to calculate the gradient between the points (0,6) and (1,2) - 4	**(1)** **(1)**
(f)	State the range of values for x where the graph has a negative rate of change.	**(f)** $x < 0.8$ $x > 2.5$	**(1)** **(1)**

Where to go next?

For more diagnostic questions, and GCSE maths revision resources and worksheets to support students in fixing any misconceptions take a look at the free Third Space Learning GCSE maths revision pages.

Scan the QR code to discover our library of FREE GCSE maths revision resources

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

Our specialist tutors will help students to 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.

THIRD SPACE LEARNING