**Name:** SOLUTIONS

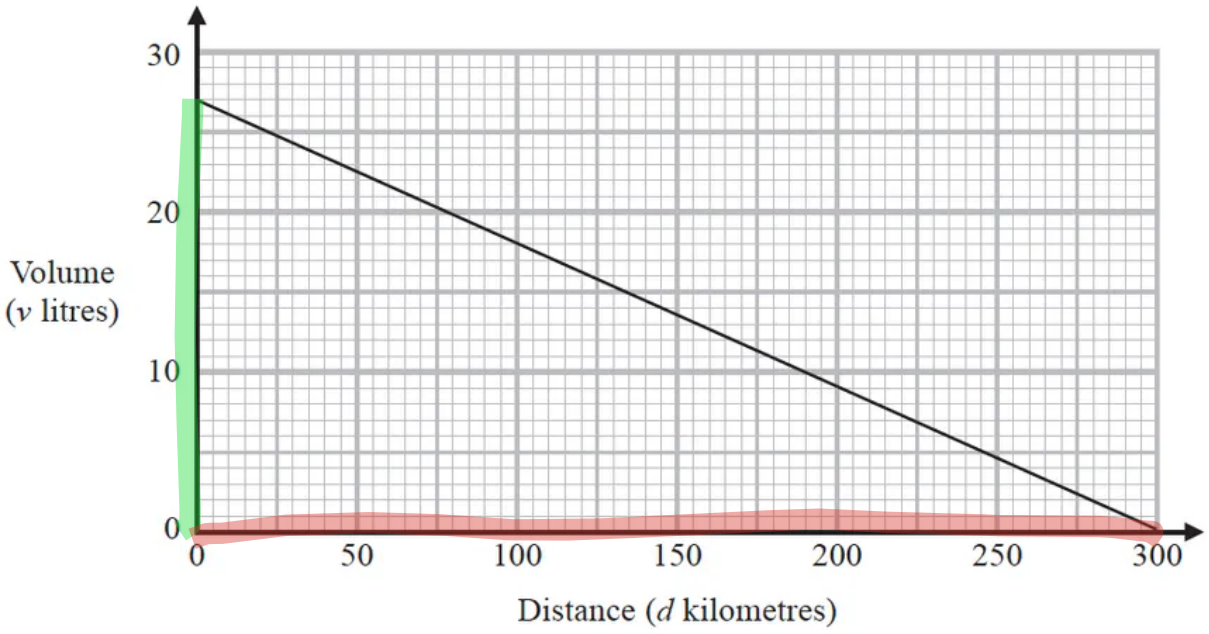
| GCSE (1 - 9)<br><br>Gradient of a Straight Line (Higher) | Solutions: |
|---|---|

These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***November 2021*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk
These worksheets were made using examq.co.uk

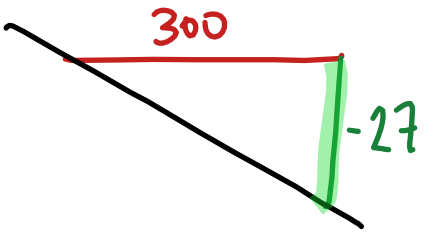
| Question | Where the question appeared |
|---|---|
| 1 | Edexcel, GCSE, Autumn 2020, Paper 2H, Q12 |
| 2 | Edexcel, GCSE, Autumn 2019, Paper 2H, Q21 |
| 3 | Edexcel, GCSE, Autumn 2018, Paper 2H, Q6 |
| 4 | Edexcel, GCSE, Summer 2018, Paper 2H, Q3 |
| 5 | Edexcel, GCSE, Summer 2018, Paper 3H, Q12 |
| 6 | Edexcel, GCSE, Autumn 2017, Paper 2H, Q10 |
| 7 | Edexcel, GCSE, Autumn 2017, Paper 2H, Q19 |
| | |
| | |

**1**

The graph gives information about the volume, $v$ litres, of petrol in the tank of Jim's car after it has travelled a distance of $d$ kilometres.




(a) Find the gradient of the graph.




$\frac{-27}{300} = -0.09$

(2)

(b) Interpret what the gradient of the graph represents.

The volume of petrol in the tank decreases by 0.09 of a litre for every km the car drives.

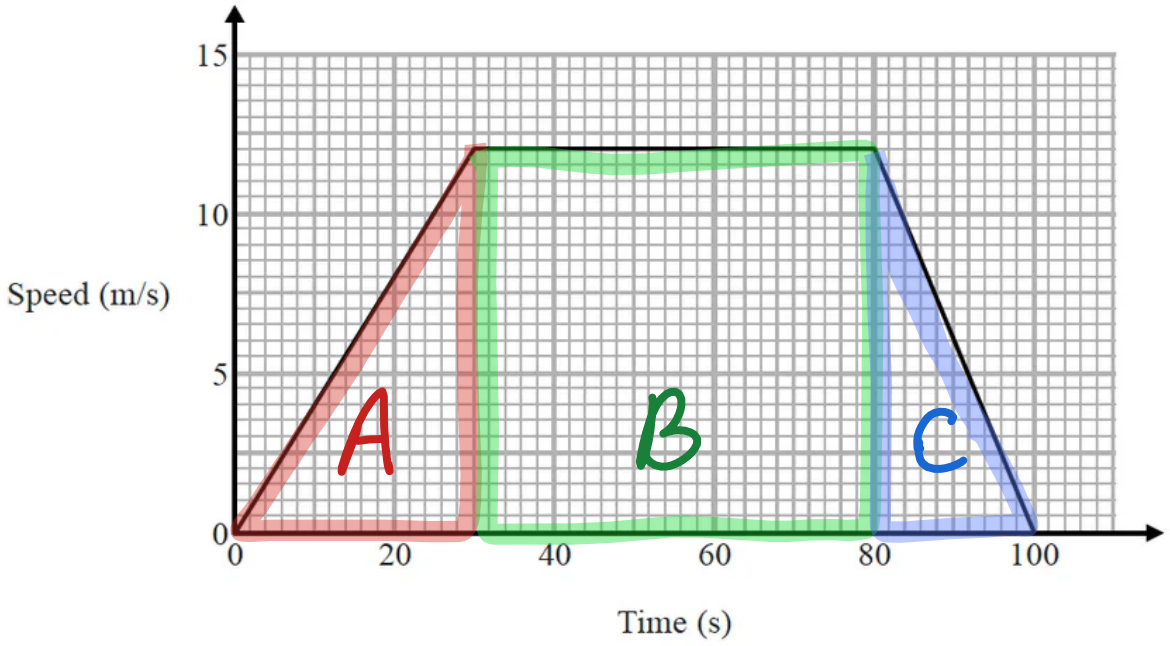
(1)

**(Total for Question 12 is 3 marks)**

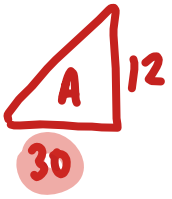
*[Edexcel, GCSE, Autumn 2020, Paper 2H, Q12]*

**2**

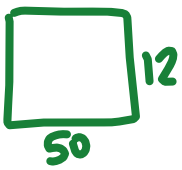
Here is a speed-time graph for a train journey between two stations.
The journey took 100 seconds.




(a) Calculate the time taken by the train to travel half the distance between the two stations.
You must show all your working.




$\frac{30 \times 12}{2} = 180\text{m}$




$50 \times 12 = 600\text{m}$




$\frac{12 \times 20}{2} = 120\text{m}$

$180 + 600 + 120 = 900\text{m}$

$900 \div 2 = 450\text{m}$

$450 - 180 = 270$

$270 \div 12 = 22.5$

$22.5 + 30 = 52.5$ seconds

(4)

(b) Compare the acceleration of the train during the first part of its journey with the acceleration of the train during the last part of its journey.

Acceptable
(acceleration) during first part is positive but (acceleration) during last part is negative / deceleration
(acceleration is) greater during the last part than during the first part
gradient is steeper in the last part / longer to speed up than slow down
speed / (acceleration) is increasing at start and decreasing at end
(acceleration) is slower in the first part
(acceleration) is ascending in the first part and descending in the last part
0.4 is the first part and –0.6 in the last part
Not acceptable
goes down in the last part
speed is greater in last part than first part

(1)

**(Total for Question 21 is 5 marks)**

*[Edexcel, GCSE, Autumn 2019, Paper 2H, Q21]*

**3**

$A$ is the point with coordinates $(5, 9)$
$B$ is the point with coordinates $(d, 15)$

The gradient of the line $AB$ is 3

Work out the value of $d$.

$15 - 9 = 6$

$6 \div 3 = 2$

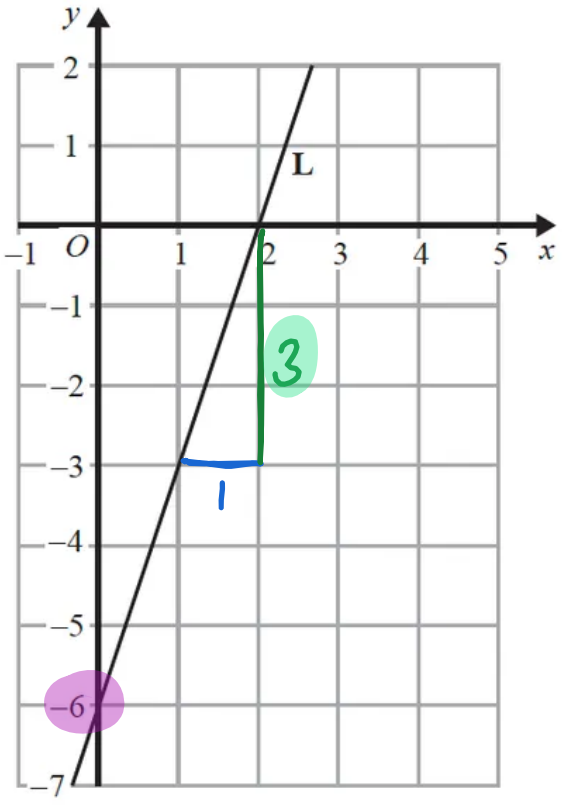
$5 + 2 = 7$

**(Total for Question 6 is 3 marks)**

*[Edexcel, GCSE, Autumn 2018, Paper 2H, Q6]*

**4**

The line **L** is shown on the grid.




Find an equation for **L**.

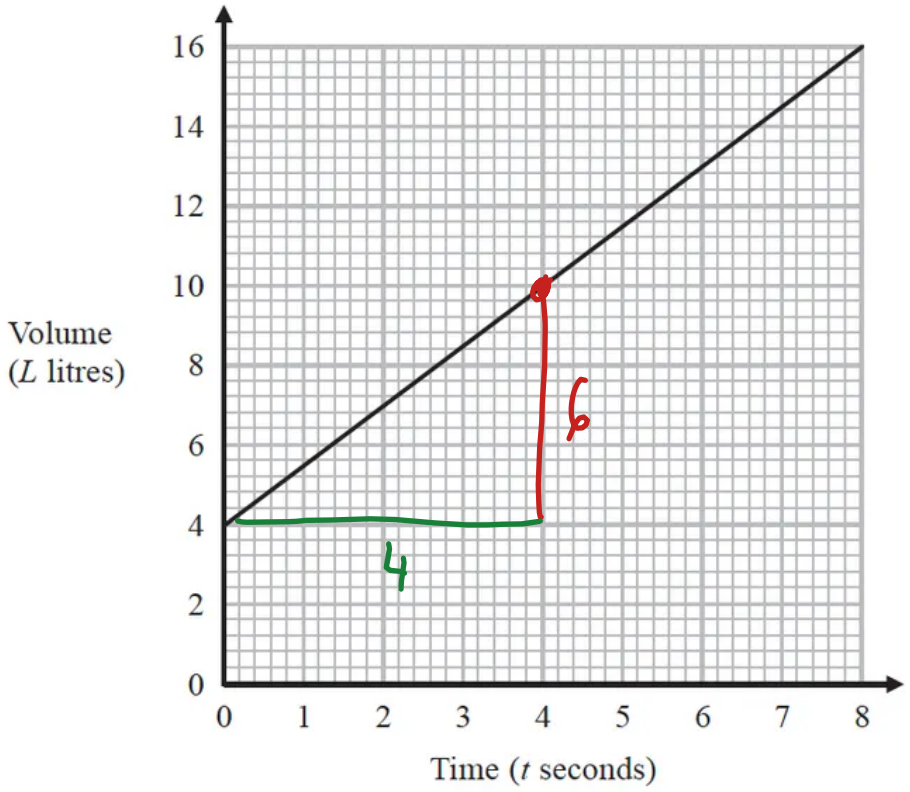
$y = 3x - 6$

**(Total for Question 3 is 3 marks)**

*[Edexcel, GCSE, Summer 2018, Paper 2H, Q3]*

**5**

The graph shows the volume of liquid ($L$ litres) in a container at time $t$ seconds.




$\frac{6}{4} = 1.5$

(a) Find the gradient of the graph.

1.5

(2)

(b) Explain what this gradient represents.

The rate that the container is filling by every second.
It is filling at 1.5 litres per second

(1)

The graph intersects the volume axis at $L = 4$

(c) Explain what this intercept represents.

The amount of liquid in the container to start with

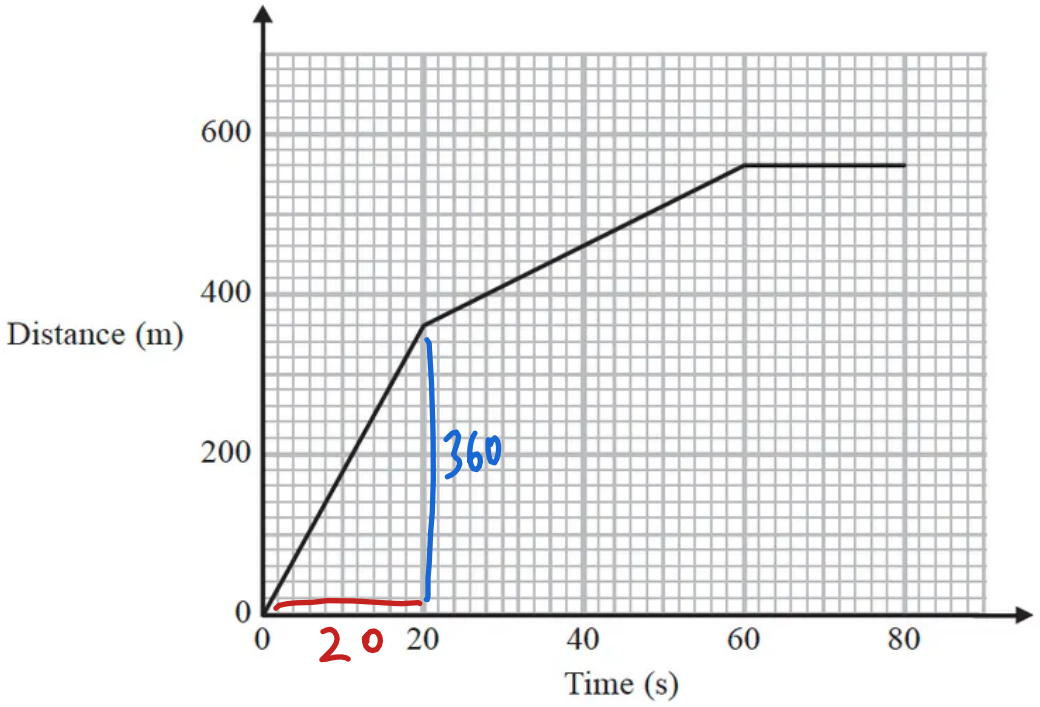
(1)

**(Total for Question 12 is 4 marks)**

*[Edexcel, GCSE, Summer 2018, Paper 3H, Q12]*

**6**

Here is part of a distance-time graph for a car's journey.




(a) Between which two times does the car travel at its greatest speed?
Give a reason for your answer.

0 to 20 seconds.
This is when the gradient is steepest

(2)

(b) Work out this greatest speed.

$\frac{360}{20} = 18$

..... m/s

(1)

**(Total for Question 10 is 3 marks)**

*[Edexcel, GCSE, Autumn 2017, Paper 2H, Q10]*

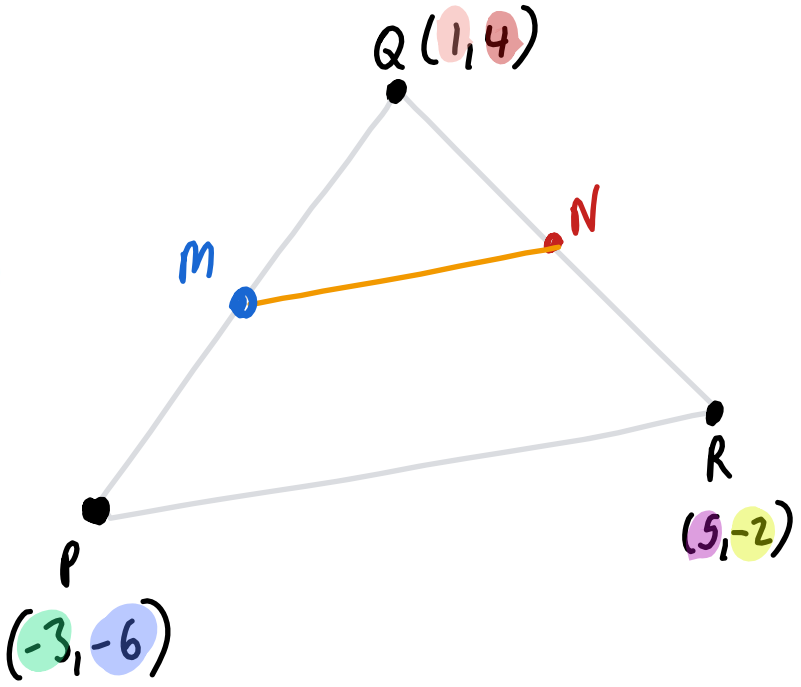
**7**

A triangle has vertices $P$, $Q$ and $R$.

The coordinates of $P$ are $(-3, -6)$
The coordinates of $Q$ are $(1, 4)$
The coordinates of $R$ are $(5, -2)$

$M$ is the midpoint of $PQ$.
$N$ is the midpoint of $QR$.

Prove that $MN$ is parallel to $PR$.
You must show each stage of your working.




$M\left(\frac{-3+1}{2}, \frac{4+-6}{2}\right) = (-1, -1)$

$N\left(\frac{1+5}{2}, \frac{4+-2}{2}\right) = (3, 1)$

$\overrightarrow{MN} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$ $\overrightarrow{PR} = \begin{pmatrix} 8 \\ 4 \end{pmatrix}$

Parallel as PR and MN are magnitudes of the same vector

Alternatively the gradients of both lines are 0.5 and therefore parallel.

**(Total for Question 19 is 4 marks)**

*[Edexcel, GCSE, Autumn 2017, Paper 2H, Q19]*