FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

A10: Interpreting gradients and intercepts

Interpret gradients and intercepts in context

20 marks · 25 minutes · Non-calculator

1) A plumber charges $C = 30 + 45h$ pounds for h hours. Explain what the 30 and the 45 mean.

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[Question 1: 2 marks]

2) Plan A costs $C = 10 + 0.05m$ pounds and plan B costs $C = 0.1m$ pounds for m minutes of calls.

(a) Show that the plans cost the same for 200 minutes.

(2)

(b) Which plan is cheaper for 300 minutes? Explain.

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(2)

[Question 2: 4 marks]

3) Explain what a gradient of -2 tells you about a straight-line graph.

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[Question 3: 1 marks]

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4) The volume of water in a tank is $V = 500 - 20t$ litres after t minutes.

(a) Explain what the -20 means.

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(1)

(b) Explain what the 500 means.

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(1)

(c) Show that the tank is empty after 25 minutes.

(2)

[Question 4: 4 marks]

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5) Show that the gradient of $3x + 2y = 12$ is -1.5

[Question 5: 2 marks]

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6) A taxi charges $C = 2.5 + 1.8d$ pounds for d miles. Show that a 10-mile ride costs £20.50

[Question 6: 2 marks]

7) Explain why a straight line through the origin shows direct proportion.

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[Question 7: 2 marks]

8) Compare the lines $y = 2x + 3$ and $y = 2x - 1$. What is the same and what is different?

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[Question 8: 2 marks]

9) Pounds are changed to euros using $e = 1.15p$. Explain what the gradient 1.15 means.

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[Question 9: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	30 is a fixed charge (C1); 45 is the cost per hour (C1).
2	(a) Shown (b) A	(a) Both £20 (M1, C1). (b) A: £25, B: £30 (M1); A is cheaper (C1).
3	Explanation	y falls by 2 for every 1 across (C1).
4	(a) water leaves at 20 litres per minute (b) 500 litres at the start (c) Shown	(a) C1. (b) C1. (c) $500 - 20t = 0$ (M1); $t = 25$ (C1).
5	Shown	$y = 6 - 1.5x$ (M1); C1.
6	Shown	2.5 + 18 (M1); C1.
7	Explanation	When $x = 0$, $y = 0$ (C1); y changes at a constant rate with x (C1).
8	Explanation	Same gradient so parallel (C1); different y-intercepts (C1).
9	Explanation	1.15 euros for each £1 (C1).