
GCSE Mathematics

Inverse Proportion

Mark Scheme - Higher Tier | Grades 6-7

M = method mark, A = accuracy mark (dependent on the preceding M mark), B = independent mark.

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Edexcel-style questions

Q1 Grade 6 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	$6 \times 8 = 48$ (total worker-days)	M1
(a)	$48 \div 4$	M1
(a)	12 days	A1

Q2 Grade 6 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	$k = 4 \times 15 = 60$	M1
(a)	$y = \frac{60}{x}$, so $y = 60 \div 10$	M1
(a)	$y = 6$	A1

Q3 Grade 7 Edexcel style

Total: 3

Part	Mark scheme	Marks
(a)	$k = 2^2 \times 18 = 72$	M1
(a)	$y = 72 \div x^2$, so $y = 72 \div 9$	M1
(a)	$y = 8$	A1

Q4 Grade 7 Edexcel style

Total: 4

Part	Mark scheme	Marks
(a)	$k = 40 \times 3 = 120$	M1
(a)	$T = \frac{120}{S}$	M1
(a)	$T = 120 \div 60$	M1
(a)	$T = 2$ hours	A1

Q5 Grade 7 Edexcel style

Total: 4

Part	Mark scheme	Marks
(a)	$k = 2^2 \times 20 = 80$	M1
(a)	$I = 80 \div d^2$	M1
(a)	$I = 80 \div 25$	M1
(a)	$I = 3.2$ lux	A1

AQA-style questions

Q6 Grade 6 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	$5 \times 12 = 60$ (total machine-hours)	M1
(a)	$60 \div 3$	M1
(a)	20 hours	A1

Q7 Grade 6 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	$k = 5 \times 18 = 90$	M1
(a)	$y = \frac{90}{x}$, so $y = 90 \div 9$	M1
(a)	$y = 10$	A1

Q8 Grade 7 AQA style

Total: 3

Part	Mark scheme	Marks
(a)	$k = 4^2 \times 5 = 80$	M1
(a)	$y = 80 \div x^2$, so $y = 80 \div 4$	M1
(a)	$y = 20$	A1

Q9 Grade 7 AQA style

Total: 4

Part	Mark scheme	Marks
(a)	$k = 5 \times 12 = 60$	M1
(a)	$D = \frac{60}{B}$	M1
(a)	$D = 60 \div 8$	M1
(a)	$D = 7.5$ days	A1

Q10 Grade 7 AQA style

Total: 4

Part	Mark scheme	Marks
(a)	$k = 3^2 \times 36 = 324$	M1
(a)	$F = 324 \div d^2$	M1
(a)	$F = 324 \div 36$	M1
(a)	$F = 9$ newtons	A1

OCR-style questions

Q11 Grade 6 OCR style**Total: 3**

Part	Mark scheme	Marks
(a)	$8 \times 15 = 120$ (total pipe-minutes)	M1
(a)	$120 \div 6$	M1
(a)	20 minutes	A1

Q12 Grade 6 OCR style**Total: 3**

Part	Mark scheme	Marks
(a)	$k = 6 \times 14 = 84$	M1
(a)	$p = \frac{84}{q}$, so $p = 84 \div 21$	M1
(a)	$p = 4$	A1

Q13 Grade 7 OCR style**Total: 3**

Part	Mark scheme	Marks
(a)	$k = 5^2 \times 4 = 100$	M1
(a)	$y = 100 \div x^2$, so $y = 100 \div 4$	M1
(a)	$y = 25$	A1

Q14 Grade 7 OCR style**Total: 4**

Part	Mark scheme	Marks
(a)	$k = 8 \times 150 = 1200$	M1
(a)	$P = \frac{1200}{V}$	M1
(a)	$P = 1200 \div 12$	M1
(a)	$P = 100$ pascals	A1

Q15 Grade 7 OCR style**Total: 4**

Part	Mark scheme	Marks
(a)	$k = 4^2 \times 25 = 400$	M1
(a)	$I = 400 \div d^2$	M1
(a)	$I = 400 \div 100$	M1
(a)	$I = 4$ units	A1

Teachably-style questions

Q16 Grade 6 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$4 \times 18 = 72$ (total painter-hours)	M1
(a)	$72 \div 9$	M1
(a)	8 hours	A1

Q17 Grade 6 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$k = 8 \times 9 = 72$	M1
(a)	$y = \frac{72}{x}$, so $6 = \frac{72}{x}$	M1
(a)	$x = 12$	A1

Q18 Grade 7 Teachably style

Total: 3

Part	Mark scheme	Marks
(a)	$k = 3^2 \times 20 = 180$	M1
(a)	$y = 180 \div x^2$, so $y = 180 \div 36$	M1
(a)	$y = 5$	A1

Q19 Grade 7 Teachably style

Total: 4

Part	Mark scheme	Marks
(a)	$k = 2.5 \times 136 = 340$	M1
(a)	$f = \frac{340}{w}$	M1
(a)	$f = 340 \div 4$	M1
(a)	$f = 85 \text{ Hz}$	A1

Q20 Grade 7 Teachably style

Total: 4

Part	Mark scheme	Marks
(a)	$k = 5^2 \times 18 = 450$	M1
(a)	$F = 450 \div d^2$	M1
(a)	$F = 450 \div 9$	M1
(a)	$F = 50 \text{ newtons}$	A1

END OF PAPER

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