FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

A5: Rearranging formulae

Solve problems by rearranging formulae

20 marks · 25 minutes · Non-calculator

1) A plumber charges $C = 40 + 25h$ pounds for h hours. A customer pays £152.50. How many hours did the job take?

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[Question 1: 2 marks]

2) $F = 1.8C + 32$. A temperature is 98.6 °F. What is it in °C?

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[Question 2: 2 marks]

3) $v^2 = u^2 + 2as$. A car travelling at 20 m/s brakes with $a = -5\,\text{m/s}^2$ until it stops. How far does it travel while braking?

..... m

[Question 3: 3 marks]

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4) A cylinder has volume $V = \pi r^2 h$. A tin holds $500\pi\,\text{cm}^3$ and is 20 cm tall. Find its radius.

..... cm

[Question 4: 3 marks]

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5) $A = P\left(1 + \frac{r}{100}\right)^2$. £2000 grows to £2420 in 2 years. Find the interest rate r.

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[Question 5: 3 marks]

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6) $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$. Find v when $f = 10$ and $u = 15$

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[Question 6: 3 marks]

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7) Make x the subject of $y = \dfrac{x+2}{x-3}$. Use your formula to find x when $y = 2$

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[Question 7: 4 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	4.5	$25h = 112.5$ (P1); A1.
2	37	$1.8C = 66.6$ (P1); A1.
3	40	$0 = 400 - 10s$ (P1, P1); A1.
4	5	$r^2 = \frac{500\pi}{20\pi}$ (P1, P1); A1.
5	10	$\left(1 + \frac{r}{100}\right)^2 = 1.21$ (P1); $= 1.1$ (P1); A1.
6	30	$\frac{1}{v} = \frac{1}{10} - \frac{1}{15}$ (P1); $= \frac{1}{30}$ (P1); A1.
7	$x = \frac{3y+2}{y-1}$; 8	$xy - 3y = x + 2$ (P1); $x(y - 1) = 3y + 2$ (P1); formula (A1); 8 (A1).