

**NATIONAL 5 MATHEMATICS
MODEL PAPER 3**
Paper 1

1. $3\frac{1}{2}$
2. $x < 1$
3. $(2p + 3)(p - 4)$
4. (a) $S = -4T + 130$
(b) £10
5. 113.04 cm^3
6. $x = 7, y = -2$
7. 540 millilitres
8. (a) $\sqrt{\frac{(1-2)^2 + (1-2)^2 + (1-2)^2 + (2-2)^2 + (5-2)^2}{5-1}} = \sqrt{\frac{12}{4}} = \sqrt{3}$
or $\sqrt{\frac{(1^2 + 1^2 + 1^2 + 2^2 + 5^2) - \frac{(1+1+1+2+5)^2}{5}}{4}} = \sqrt{\frac{12}{4}} = \sqrt{3}$
(b) $\sqrt{3}$
9. 750 grams
10. 45°
11. $6\sqrt{2}$
12. (a) $\frac{40}{x}$
(b) $\frac{40}{x+5}$
(c) $\frac{200}{x(x+5)}$
13. (a) $(-2, -16)$
(b) $(6, -16)$
(c) $y = (x - 14)^2 - 16$

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Paper 2

1. £1 158 000 000 000
2. $\binom{5}{-1}$
3. -9
4. 1022 mm^3
5. $G(0, 2, 2), Q(1, 2, 1)$
6. y^2
7. (a) $-\frac{1}{2}$
(b) $(0, 3)$
8. 313 in^2
9. discriminant = -31 ; no real roots since discriminant < 0 .
10. 126.9°
11. 21 centimetres
12. 5
13. 8.6 metres
14. $0.85^4 = 0.522$; no, since $0.522 > 0.5$
15. (a) 3.875 metres
(b) 3.5 metres