QT Quick Test 5D

Non Calculator

1. $6x^2 = 384$. Find the value of x. (2 marks)
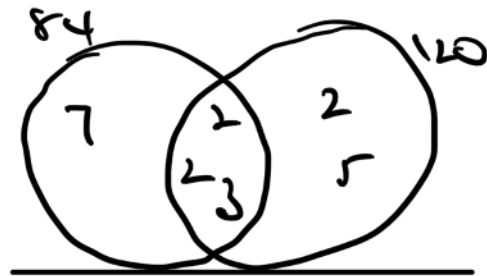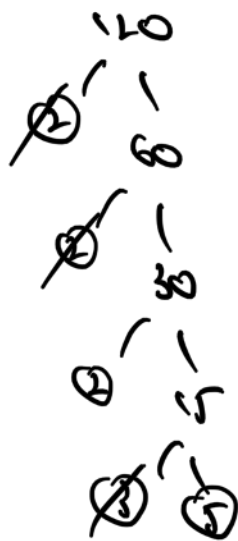
$$6\sqrt{384} \quad \overset{64}{}$$

$x^2 = 64$

$x = 8$

2. Find the lowest common multiple (LCM) of 84 and 120. (3 marks)

$LCM = 2 \times 2 \times 3 \times 7 \times 2 \times 5$

$= 120 \times 7$

$= 840$

3. A team of road workers can resurface $\frac{5}{6}$ km of a road each day. How many days will it take to resurface a road of length 30km? (3 marks)

$$\frac{30}{1} \div \frac{5}{6} \qquad \frac{\overset{6}{30}}{1} \times \frac{6}{\underset{1}{5}} \quad = \frac{36}{1} \quad = 36 \text{ days}.$$

4. Work out the value of 0.000035 ÷ 0.0007 (2 marks)

$$\frac{0.000035}{0.0007} = \frac{0.35}{7} = 7\overline{)0.35}^{\,0.05} = 0.05$$

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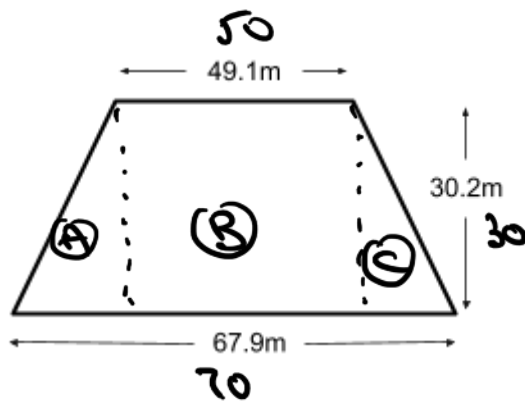Non Calculator

5. A farmer has a field in the shape of a trapezium as shown.
(a) Work out an estimate for the area of the field. (3 marks)

50

49.1m

30.2m

30

A B C

67.9m

70

$$\frac{1}{2}(a+b)h$$

$$\frac{1}{2}(50+70)30$$

$$60 \times 30$$

$$1800 \ m^2$$

(b) Is your answer an overestimate or underestimate? Give a reason for your answer.
(1 mark)

Overestimate ac rounded up, except 30.1 rounded down slightly.

6. Work out, giving your answers in standard form
(a) $4.6 \times 10^3 + 6.7 \times 10^5$ (2 marks)

$$\begin{array}{r} 4600 \\ 670000 \ + \\ \hline 674600 \end{array}$$

$$6.746 \times 10^5$$

(b) $9.8 \times 10^6 - 5.1 \times 10^4$ (2 marks)

$$\begin{array}{r} 9800000 \ - \\ 51000 \\ \hline 9749000 \end{array}$$

$$9.749 \times 10^6$$

7. Write down $\frac{2}{11}$ as a recurring decimal. (1 mark)
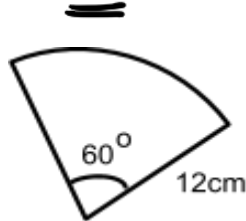
$$11 \overline{\smash{\big)}\, 2.000}^{\,0.1818\ldots}$$

$$0.\dot{1}\dot{8}$$

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8. Work out the area of the sector of the circle radius 12cm shown. Give your answer in terms of π, in its simplest form .   (3 marks)

$$\text{Area} = \pi r^2$$

$$= \frac{60}{360} \times \pi \times 12^2$$

$$= \frac{1}{6} \times \pi \times 144$$

$$= 24\pi \text{ cm}^2$$

$$6\overline{)144} \quad \frac{24}{}$$

$$x_1 \, y_1 \quad x_2 \, y_2$$

9. Find the equation of the straight line which passes through the points (3,2) and (6,11)   (3 marks)

$$y = mx + c$$

$$\text{gradient} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{11 - 2}{6 - 3}$$

$$= \frac{9}{3} = 3$$

$$y = 3x + c$$

At point 6, 11

$$11 = 3(6) + c$$

$$11 = 18 + c$$

$$-7 = c$$

∴ Equation $y = 3x - 7$

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Non Calculator

10 (a) Complete the table of values for $y = x^2 - x - 4$

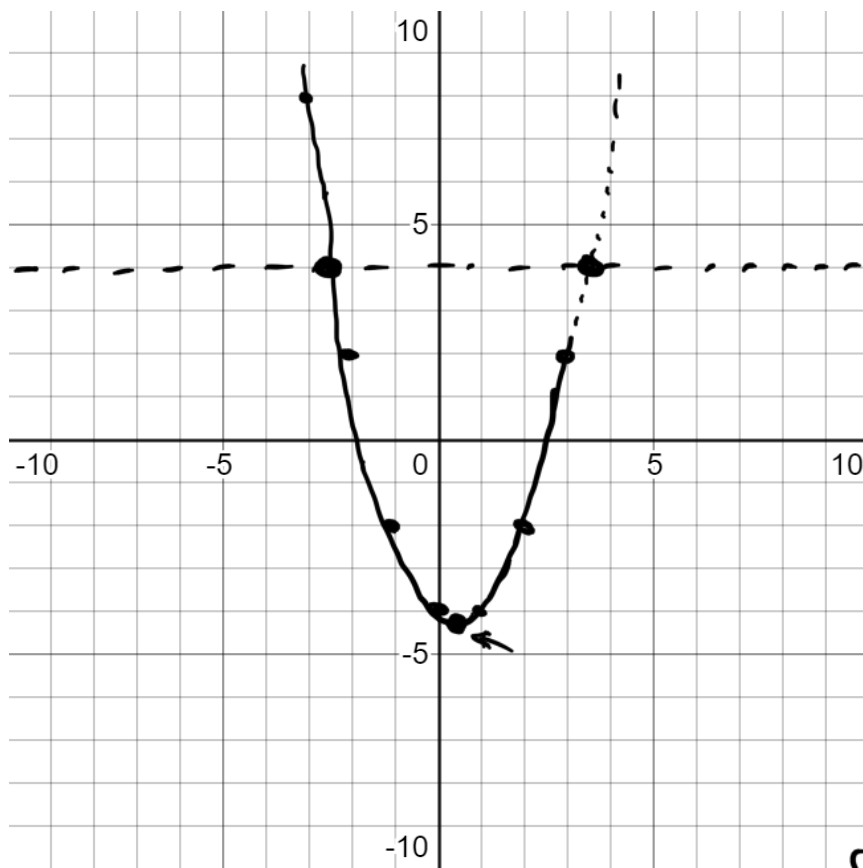| x	-3	-2	-1	0	1	2	3
y	8	2	-2	-4	-4	-2	2

(b) On the grid, draw the graph $y = x^2 - x - 4$ (3 marks)

(c) Use the graph to estimate the values of x when y = 4   (1 mark)

$$x = -2.5 \quad x = 3.5$$

(d) Use the graph to estimate the turning point of $y = x^2 - x - 4$ (1 mark)

$$(0.5, -4.5)$$

$y = x^2 - x - 4$

$x = 2$

$2^2 - 2 - 4 = -2$

$x = 3$

$3^2 - 3 - 4 = 2$

$x = -1$

$(-1)^2 - (-1) - 4 = -2$

+ve   +ve

$x = -2$

$(-2)^2 - (-2) - 4 = 2$

$x = -3$

$(-3)^2 - (-3) - 4 = 8$

(Total 30 marks)