QT Quick Test 1 - Higher Non Calculator
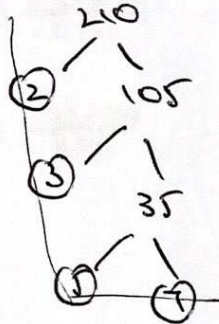
1. $4y^2 = 196$. Find the value of y.

$$y^2 = \frac{196}{4}$$

$$y^2 = 49$$

$$y = \pm 7.$$

$$4\sqrt{196} \;\; \overset{49}{}$$

2. Express 210 as a product of its prime factors.

$$210 = 2 \times 3 \times 5 \times 7$$

3. A plastic cuboid has a density of 0.8g/cm³. The volume of the cuboid is 400cm³. Calculate the mass of the cuboid.

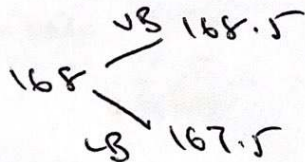$$Density = \frac{Mass}{Volume}$$

$$0.8 = \frac{Mass}{400}$$

$$0.8 \times 400 = Mass$$

$$320\,g = Mass$$

$$320g = Mass.$$

4. A wooden block has a mass of 168grams, correct to the nearest gram.
   (a) What is the greatest possible mass of the block?
   (b) What is the least possible mass of the block?

$$168 \nearrow^{\;\;+8\;\; 168.5}_{\;\;-8\;\; 167.5}$$

$$167.5 \leq Mass < 168.5$$

5. Write the following in standard form
   (a) 213000
   (b) 0.0000067
   (c) 22 x 10⁷

$2 \cdot 13 \times 10^5$

$6 \cdot 7 \times 10^{-6}$

$2 \cdot 2 \times 10^8$

6. Estimate the following

(a) $\dfrac{718 \times 6.12}{0.191}$ $= \dfrac{700 \times 6}{0.2} = \dfrac{4200 \times 10}{0.2 \times 10} = \dfrac{42000}{2} = \underline{\underline{21000}}$

(b) $\dfrac{6.92 \times 309}{0.503}$ $= \dfrac{7 \times 300}{0.5} = \dfrac{2100}{0.5} = \dfrac{21000}{5} = \underline{\underline{4200}}$

7. A machine makes 54 car steering wheels every hour. The machine makes steering wheels 7½ hours each day, on 6 days of the week. The steering wheels are packed into boxes. Each box holds 15 steering wheels. How many boxes will be required for all the steering wheels made each week?

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  54
×  7
 378
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```
 378
  27
 405  per day
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Per week
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  405
×   6
 2430
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Boxes $\dfrac{2430}{15} = \dfrac{486}{3} = \underline{\underline{162 \text{ BOXES}}}$ (÷5 top and bottom)

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   486
5)2430
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  162
3)486
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$$y = (-3)^2 - (-3) - 2$$
$$= 9 + 3 - 2$$
$$= 10$$

$$y = (2)^2 - (2) - 2$$
$$= 4 - 2 - 2$$
$$= 0$$

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

$$y = (3)^2 - (3) - 2$$
$$= 9 - 3 - 2$$
$$= 4$$

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

x	-3	-2	-1	0	1	2	3	4
y	10	4	0	-2	-2	0	4	10

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

$$y = (4)^2 - (4) - 2$$
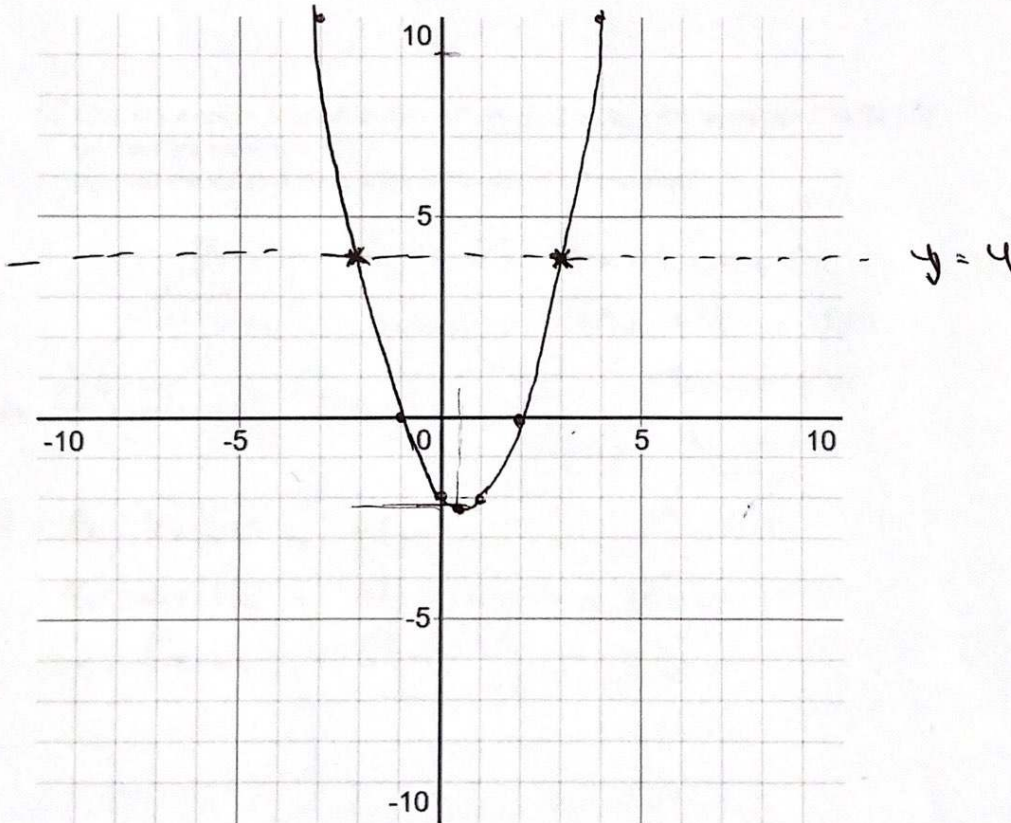$$= 16 - 4 - 2$$
$$= 10$$

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

$$x = -2 \qquad x = 3$$

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

$$(0.5, -2.25)$$

$y = 4$

$$y = 2x + c$$
$$2 = 2(3) + c$$
$$2 = 6 + c$$
$$\underline{\underline{-4 = c}}$$

$$y = 2x + c$$
$$6 = 2(5) + c$$
$$6 = 10 + c$$
$$\underline{\underline{-4 = c}}$$

9. Find the equation of the straight line which passes through the points (3,2) and (5,6)
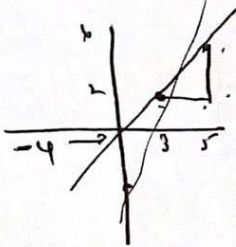
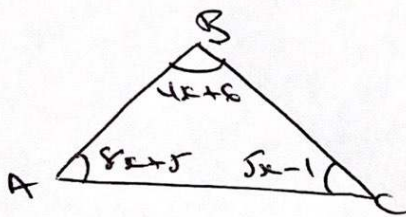$$\frac{y - y_1}{x - x_1} = \frac{6 - 2}{5 - 3} = \frac{4}{2} = 2$$

$$y = 2x + c.$$

$$\underline{\underline{y = 2x - 4}}$$

10. ABC is a triangle. Angle A is $(8x + 5)^0$, angle B is $(4x + 6)^0$ and angle C is $(5x - 1)^0$.
   (a) Find the value of x
   (b) Find the value of each angle of triangle ABC in degrees

$$8x + 5 + 4x + 6 + 5x - 1 = 180$$
$$17x + 10 = 180$$
$$17x = 170$$
$$\text{(a)} \quad \underline{x = 10}$$

(b) A $\quad 8x + 5 = 8(10) + 5 = \underline{85°}$

B $\quad 4x + 6 = 4(10) + 6 = \underline{46°}$

C $\quad 5x - 1 = 5(10) - 1 = \underline{49°}$