

## Credit Paper 1 2004

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1. Given  $6.2 - (4.53 - 1.1)$

Remembering **BODMAS** we do the **Multiplication** first then the **Addition**.

$$6.2 - 3.43 = 2.77$$

2. Given  $\frac{2}{5}$  of  $3\frac{1}{2} + \frac{4}{5}$

Using the rules for fractions we have

Make top heavy and do the 'of' (multiplication) first.  $\frac{2}{5} \cdot \frac{7}{2} = \frac{7}{5}$

We then do the addition

$$\frac{7}{5} + \frac{4}{5} = \frac{11}{5}$$

3. Give  $A = 2x^2 - y^2$   $x = 3$   $y = -4$

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

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4. Given  $f(x) = \frac{3}{m} + \frac{4}{(m+1)}$

Simplifying we get

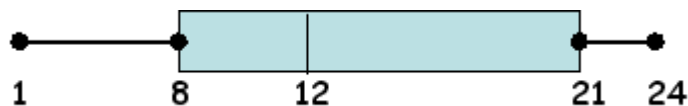
$$\frac{3(m+1) + 4m}{m(m+1)} = \frac{7m+3}{m(m+1)}$$

5. Given the temperature data for a year we arrange it into ascending order to get.

1, 4, 8, 8, 9, 10, 14, 15, 20, 22, 23, 24

$$Q_1 = \frac{8+8}{2} = 8 \quad Q_2 = \frac{10+14}{2} = 12 \quad Q_3 = \frac{20+22}{2} = 21$$

Hence boxplot is given below



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6. Given the information below we have

Special offer has	450g
% increase is	12.5%

Hence standard size is

$$x + 0.125x = 450 \quad x(1 + 0.125) = 450 \quad x = \frac{450}{(1 + 0.125)} = 400\text{g}$$

7. Given the information below we have

School raffle chance of win is  $\frac{15}{1200} \cdot 100 = 1.25\%$  of winning

Church raffle chance of win is  $\frac{20}{1800} \cdot 100 = 1.11\%$  of winning

Hence John has a better chance of winning in the school raffle.

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8. Given the sequence  $7, -2, 5, 3, 8$

(a) Using the rule for generating the sequence above for the new sequence below we have

$$x, y, \_, \_, 5$$

$$x, y, (x+y), y+(x+y), 5$$

Using the rule we can write

$$(x + y) + [y + (x + y)] = 5 \quad x + y + y + x + y = 5 \quad 2x + 3y = 5 \quad \text{As required}$$

(b) Repeating part (a) for the new sequence below we have

$$y, x, \_, \_, \_, 17$$

$$y, x, (y+x), x+(y+x), (y+x)+ x+(y+x), 17$$

Using the rule we can write

$$x + (y + x) + (y + x) + x + (y + x) = 17 \quad 5x + 3y = 17 \quad \text{As required}$$

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(c) To find  $x$  and  $y$  we solve the simultaneous equations.

$$5x + 3y = 17 \quad \text{equation 1}$$

$$2x + 3y = 5 \quad \text{equation 2}$$

Subtracting equation 2 from equation 1 we get

$$3x = 12 \quad x = 4$$

Substituting

$$x = 4$$

Into equation 1 to find  $y$  we get

$$5 \cdot 4 + 3y = 17$$

$$3y = -3 \quad y = -1$$

As a check substitute into equation 2 to make sure they satisfy the equation.

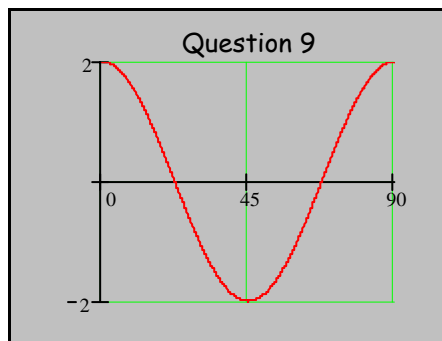
$$2(4) + 3(-1) = 5 \quad \text{Correct!}$$

Hence we have  $x = 4$   $y = -1$

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9. Given  $y = a \cdot \cos \cdot bx^\circ$



$a$  = Maximum Height of graph measured from the x-axis = 2

$b$  = number of cycles in 360 degrees = 4 (4 x 90 = 360)

Hence we have

$$y = 2\cos 4x^\circ$$

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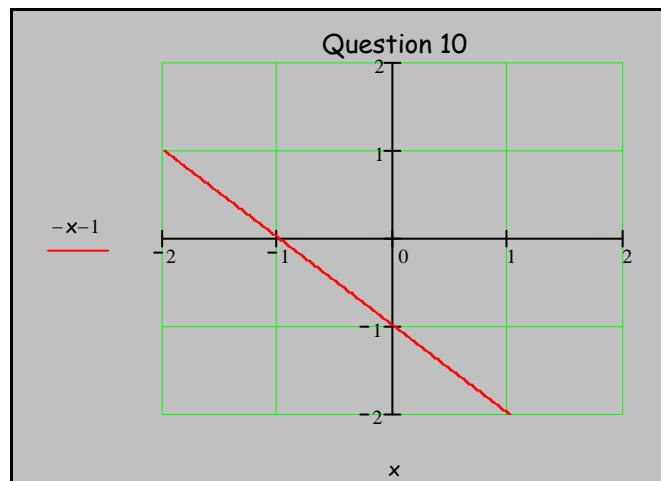
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10. Given the relationship  $y = ax + b$

Sketching a graph such that  $a, b < 0$

Choosing  $a, b = -1$

We get



11. Given  $2\sqrt{75}$

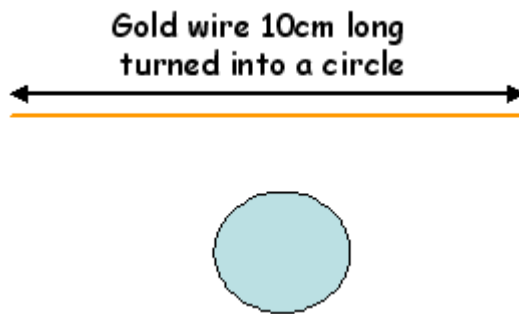
(a) Simplifying we get  $2\sqrt{75} = 2\sqrt{3} \cdot \sqrt{25} = 10\sqrt{3}$

(b) Give  $2^0 + 3^{-1}$   $2^0 + 3^{-1} = 1 + \frac{1}{3} = \frac{4}{3}$

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12. Given the diagram below.



We have

$$C = 2 \cdot \pi \cdot r \quad 10 = 2 \cdot \pi \cdot r \quad r = \frac{10}{2 \cdot \pi} = \frac{5}{\pi}$$

Hence Area is

$$A = \pi \cdot r^2 = \pi \cdot \left(\frac{5}{\pi}\right)^2 = \frac{25}{\pi}$$