Maths Literacy Paper 2 – Suggested Solutions

Question 1:

1.1.1 Volume $= \frac{1}{2}\pi r^2 h$

$= \frac{1}{2}\pi(4)^2(5)$

$= 125{,}66\ m^3$ (4)

1.1.2 Volume = Block – half cylinder

$= [4 \times (4 + 4) \times 5] - 125{,}66$

$= 160 - 125{,}66$

$= 34{,}34\ m^3$ (3)

1.2 Surface area = Rectangle – semi circle

$= (4 \times 8) - \frac{1}{2}\pi(4)^2$

$= 32 - 25{,}13$

$= 6{,}87\ m^2$ (3)

1.3 Surface area = Two rectangles + $2 \times 6{,}87$

$= 2 \times (4 \times 5) + 2 \times 6{,}87$

$= 53{,}74\ m^2$ (3)

1.4 Curved surface $= \frac{1}{2} \times 2\pi rh$

$= \pi(4)(5)$

$= 62{,}83\ m^2$ (3)

1.5 Area to be painted = Outside + Inside

= 53,74 + 62,83 (2)

1.6 Total gathered = 45×200

= R9 000 (2)

1.7 Still need R9 000, so each gives $\frac{9000}{100}$ = R90.

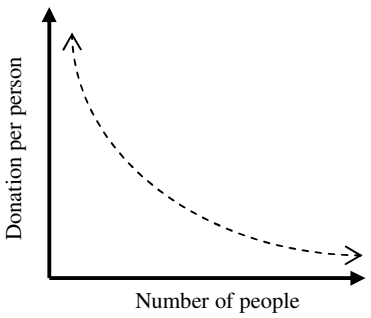
Could also argue that half as many people means twice as much money per person, so each must contribute 2×45 = R90. (2)

1.8 Still need R9 000, so each gives $\frac{9000}{50}$ = R180.

Same argument as above applies again: half as many people means twice as much money per person, so each must contribute 2×90 = R180 (2)

1.9 An inverse relationship (as one increases, the other decreases). (1)

1.10



(5)

Question 2:

2.1 Cash withdrawn = 2 500 + 500 + 300

= R3 300 (2)

2.2 Total fees paid = 5,00 + 3,00 + 1,00 + 10,67 + 3,00 + 0,60

= R23,27 (2)

2.3 Amount = 3 251,68 – 3 164,03 – 3

= R84,65 (2)

2.4 The fee is R3. Both transactions under R100 have this same amount as the fee. (1)

2.5 Balance = 3 164,03 + 1 200

= R4 364,03 (2)

2.6.1 Average balance = $\frac{3251,68 + 3362,72}{2}$

= R3 307,20 (3)

2.6.2 Interest = 0,5 % × R3 307,20

= R16,54 (3)

2.7 Percentage = $\frac{1}{500} \times 100$ (could also use 5/2 500 or 0,60/300)

= 0,2 % (3)

2.8 Prior balance = 3 251,68 + 2 500 + 5

= R5 756,68 (3)

2.9 Area $= 30 \times 20$

$= 600 \text{ cm}^2$ (1)

2.10 Triangle A $= \frac{1}{2} \times 14 \times 30$

$= 210 \text{ cm}^2$ (2)

Triangle B $= \frac{1}{2} \times (20 - 14) \times 30$

$= 90 \text{ cm}^2$ (3)

Triangle C = Page – Triangle A – Triangle B

$= 600 - 210 - 90$

$= 300 \text{ cm}^2$ (3)

Question 3:

3.1 Fixed costs = Water and electricity + Labour

= 360 + 3 400

= R3 760 (2)

3.2 Revenue = $128x$ (2)

3.3 Total cost = $3\,760 + 48x$ (3)

3.4 Break even when revenue = total cost

$$128x = 3\,760 + 48x$$

$$128x - 48x = 3\,760$$

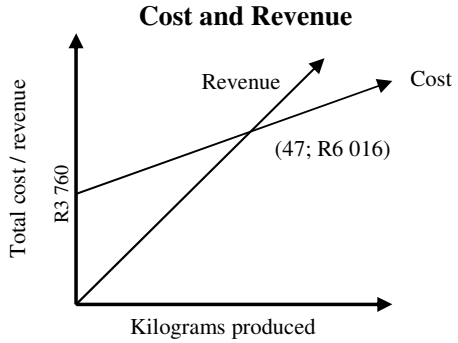
$$80x = 3\,760$$

$$x = \frac{3760}{80}$$

$$= 47$$

So 47 kilograms must be produced to break even. (3)

3.5



(4)

To obtain R6 016, sub $x = 47$ into cost or revenue function.

3.6 Profit per kg = 128 – 48

= R80 (2)

3.7 For R8 000 profit, need $\frac{8000}{80}$ = 100 kgs sold **above** break even point.

Therefore sold a total of 100 + 47 = 147 kilograms. (4)

Question 4:

4.1 5,6 % (1)

4.2 $5{,}6 + 5{,}5 = 11{,}1\ \%$ (2)

4.3 15 to 19 females $= 5{,}6\ \% \times 48\ 502\ 063$

$= 2\ 716\ 116$ (4)

4.4 15 to 19 people $= (5{,}5\ \% + 5{,}6\ \%) \times 48\ 502\ 063$

$= 11{,}1\ \% \times 48\ 502\ 063$

$= 5\ 383\ 729$ (4)

4.5 % female $= 5{,}0 + 5{,}4 + 5{,}7 + 5{,}6 + 4{,}9 + 4{,}5 + 3{,}9 + 3{,}6 + 3{,}1 + 2{,}5 + 1{,}9 + 1{,}5 + 1{,}4 + 1{,}1 + 0{,}9 + 0{,}5 + 0{,}4 + 0{,}2$

$= 52{,}1\ \%$ (3)

4.6 Younger, because the pyramid is fatter at the bottom (younger age groups) than at the top. There is a larger percentage of the population towards the bottom of the pyramid. (2)

4.7 Growing, because if there are more young people than old people, then adults are having more than two children per couple (i.e. they are replacing themselves and then adding on to the population). If the trend continues, we can expect the current young people to also have more than two children per couple, causing the population to increase further. (3)