


SHARP

Worksheet 3 Memorandum – Measurement

Mathematical Literacy – Grade 12

1.
 - a) $17 \text{ mm} \div 1000 = 0.017 \text{ m}$
 - b) $10\,458 \text{ g} \div 1000 = 10.458 \text{ Kg}$ $10.458 \text{ Kg} \div 1000 = 0.010458 \text{ tons}$
 - c) $3 \text{ hours } 21 \text{ minutes} = (3 \times 60) + 21 \text{ minutes} = 201 \text{ minutes}$
 $201 \text{ min} \times 60 = 12\,060 \text{ seconds}$
 - d) $0.905 \text{ km} \times 1000 = 905 \text{ m}$ $905 \text{ m} \times 100 = 90\,500 \text{ cm}$
 - e) $12\,182\,400 \text{ seconds} \div 60 = 203\,040 \text{ minutes}$
 $203\,040 \div 60 = 3\,384 \text{ hours}$
 $3\,384 \text{ hours} \div 24 = 141 \text{ days}$
 - f) $2.5 \text{ days} = 2.5 \times 24 = 60 \text{ hours}$ $60 \text{ hours} \times 60 = 3\,600 \text{ minutes}$

2.
 - a) $20 \text{ ml} \div 5 \text{ ml} = 4 \text{ teaspoons of baking powder}$
 - b) $120 \text{ cupcakes} \div 24 \text{ cupcakes} = 5 \text{ batches}$
 - c) $5 \times 3 \text{ eggs} = 15 \text{ eggs are needed to make } 120 \text{ cupcakes}$
 - d) $5 \times 80 \text{ ml} = 400 \text{ ml milk needed to make } 120 \text{ cupcakes}$
 - e) $400 \text{ ml} \div 1000 = 0.4 \text{ l milk}$
 - f) $640 \text{ g} \div 185 \text{ g per batch} = 3.46$
 $\therefore \text{Danielle can make } 3 \text{ full batches of cupcakes with } 640 \text{ g of butter}$
 - g) $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$
 $^{\circ}\text{C} = (425 - 32) \div 1.8 = 218.33^{\circ}\text{C}$
 - h) $912 \div 24 = 38 \text{ batches of cupcakes}$
 $38 \times 115 \text{ g icing sugar} = 4\,370 \text{ g}$ $4\,370 \text{ g} \div 1000 = 4.37 \text{ Kg}$
 $\therefore 4.37 \text{ Kg icing sugar needed for all the cupcakes}$
 - i) $38 \text{ batches} \times R\,46 = R\,1\,748 \text{ to make } 912 \text{ cupcakes}$
 - j) $R\,16\,872 \div 912 = R\,18.50$
 - k) $\text{Money donated to charity} = \text{Sales} - (\text{Cost of the cupcakes} + \text{Cost of the icing})$
 $\text{Money donated to charity} = R\,16\,872 - (R\,1\,748 + R\,816)$
 $\text{Money donated to charity} = R\,16\,872 - R\,2\,564$
 $\text{Money donated to charity} = R\,14\,308$

3. a) $Area = l \times b$
 $A = 3m \times 3m$
 $A = 9m^2$
- b) $Area\ of\ 1\ tile = 550\ mm \times 550\ mm$
 $A = 302500\ mm^2$
 Convert: $302500mm^2 \div 1000^2 = 0.3025\ m^2$
 $\#\ tiles = 9m^2 \div 0.3025m^2 = 29.75 \approx 30\ tiles$
- c) $Time\ for\ tiling = 9m^2 \div 0.784m^2 = 11.48$
 $11.48 = 11\ hours\ 29\ minutes$
- NOTE:** On the El-535 you can use  **DWS** for an accurate answer in hours minutes and seconds.
- d) $30\ tiles\ needed + 10\% = 33\ tiles$
 $33\ tiles \div box\ of\ 6 = 5.5\ boxes \approx 6\ boxes\ (cant\ buy\ less\ than\ a\ full\ box)$
 $R\ 234 \times 6 = R\ 1404$
- e) $Cost\ of\ tiling = Tiles + Labour + Grouting + Adhesive + Spacers$
 $Cost = R\ 1404 + (11.5 \times R\ 130) + R\ 46.90 + (3 \times R\ 69.90) + R\ 14.50$
 $Total\ Cost\ of\ tiling = R\ 3\ 170.10$ $R\ 3\ 170.10 \div 9m^2 = R\ 352.23$
 $Cost\ per\ m^2 = R\ 352.23$
- f) $8 \times 0.3048\ m = 2.44m$
- g) $Area\ of\ the\ wall = 3\ m \times 2.44\ m = 7.32m^2$ Note all the walls are the same length.
 $Total\ area\ of\ all\ 4\ walls = 4(7.32m^2) = \mathbf{29.28m^2}$
- h) $2\ coats\ of\ paint = 2 \times 29.28\ m^2 = 58.56m^2$
 $58.56m^2 \div 10 = 5.86\ litres \therefore Clint\ must\ buy\ 6l\ of\ paint$
- i) $1 \times 1l + 2 \times 2.5l\ of\ paint\ are\ needed. R\ 149 + R\ 259 \times 2 = R\ 667$
 The paint will cost Clint R 667

4. a) $Area\ B1 = l \times b$ $Area\ B2 = l \times b$
 $A\ B1 = 4\ m \times 3\ m = 12\ m^2$ $A\ B2 = 3.5\ m \times 3\ m = 10.5\ m^2$
 $Total\ area = 12\ m^2 + 10.5\ m^2 = 22.5m^2$
- b) $Bedroom\ 1: 4\ m\ of\ carpeting\ can\ be\ used\ (3.66\ width \therefore 0.66\ m\ per\ meter\ wastage)$
 $Bedroom\ 2: 3m\ of\ carpeting\ can\ be\ used\ (3.66\ width \therefore 0.16\ m\ per\ meter\ wastage)$
 In total 7m carpeting must be purchased.
- c) $Wastage = Wastage\ B1 + Wastage\ B2$
 $Wastage = (0.66m \times 4m) + (0.16m \times 3m) = 3.12m^2\ is\ wasted$
- d) $Cost\ of\ carpets = Underlayment + Adhesive + Carpets + Labour$
 $Cost\ of\ carpeting = (R75 \times 7m) + (R95 \times 2) + (R890 \times 7) + R\ 1200$
 $Cost\ of\ carpeting = R\ 525 + R\ 190 + R\ 6\ 230 + R\ 1\ 200 = \mathbf{R\ 8\ 145}$

5. a) Her BMI is 25 (read off the table.) A BMI of 25 indicates that a person is on the border of normal and overweight. She should be a little bit concerned about her weight and maybe try to lose 1 or 2 Kgs so that her BMI is below 25 and keep her BMI within the normal range.
- b) Obese (BMI- 32)
- c)

Name	Weight (Kg)	Height (m)	BMI	Weight Status
Moe	66	1.65	24.24	Normal
Curly	98.5	1.91	27	Overweight
Larry	57	1.8	17.59	Underweight

6. a) $748 \text{ Km} \times 1000 = 748\,000 \text{ m}$
- b) $t = 748 \text{ km} \div 100 \text{ km/h} = 7\frac{12}{25} \approx 7 \text{ hours } 30 \text{ minutes}$
- c) $\text{Travel time} = 1 \text{ hour } 15 \text{ min} + 7 \text{ hours } 30 \text{ minutes} = 8 \text{ hours } 45 \text{ minutes}$
 $\therefore \text{Miriam must leave at } 7:45 \text{ if she wants to arrive at } 16:30.$

7. a) $\text{Cost } 1\text{day \& night} = \text{Accommodation} + \text{Transport} + \text{Meals} + \text{Drinks} + \text{Attractions}$
 $\text{Cost } 1\text{day\&night} = 21.90 + 5.20 + (3 \times 4.80) + 9.00 + 12.00 = \text{€}62.50$
- b) $\text{R } 8000 \div 14.48 = \text{€ } 552.49$
- c) $\text{€ } 552.49 \div \text{€ } 62.50 = 8.84 \text{ days} \therefore \text{Oliver can spend } 8 \text{ full days in the Netherlands}$
- d) $\text{€ } 282.50 \times 14.48 = \text{R } 4090.60 \text{ to spend on gifts.}$
- e) $\text{€ } 552.49 - (\text{€ } 62.50 \times 8) = \text{€ } 52.49$
 $\text{€ } 52.49 \times 14.48 = \text{R } 760.06$
- f) $\text{€ } 21.90 \times 8 = \text{€ } 175.20$

8. a) $18 \text{ h } 03\text{m} - 16 \text{ h } 42 \text{ m} = 1 \text{ h } 21 \text{ m}$
- b) $18 \text{ h } 03 \text{ m} - 16 \text{ m} = 17 \text{ h } 47 \text{ m}$
- c) $17 \text{ h } 47\text{m} - 10 \text{ h } 5\text{m} = 7 \text{ hour } 42 \text{ mins} \therefore \text{Grace spent } 7 \text{ hours } 42 \text{ minutes on the train}$
- d) $7 \text{ hours } 42 \text{ minutes} \times 32 \text{ km per hour} = 246.4 \text{ km}$
- e) Mrs Smith arrived at 16:17 and left the station at 18:03.
 $18 \text{ h } 03 \text{ m} - 16 \text{ h } 17 \text{ m} = 1 \text{ h } 46 \text{ m}$
 $\therefore \text{Mrs Smith waited for } 1 \text{ hour and } 46 \text{ minutes}$