SHARP

Worksheet 2 Memorandum – Measurement

Mathematical Literacy – Grade 11

1. a) $6{,}6\ ml$
   b) $1{:}05$
   c) $73\ ml$
   d) $82{,}3\ cm$
   e) $110\ km/hour$
   f) $25℃$

2. a) $50\ g\ \div 1000 = 0.05\ Kg$
   b) $20\ cm\ \div 100 = 0.2\ m$
   c) $0.61\ l\ \times 1000 = 610\ ml$
   d) $180\ ℃\ \times 1.8 + 32 = 356\ °F$
   e) $3\ cm^3\ \div 1000 = 0.003\ l$
   f) $0.5\ tons\ \times 1\,000 = 500\ Kg$
   $500\ Kg\ \times 1\,000 = 500\,000\ g$
   g) $18\ pounds\ \div 2.20462 = 8.16\ Kg$
   h) $20\ Kg\ \div 1000 = 0.02\ tons$
   i) $0.15\ Km\ \times 1\,000 = 150\ m$
   $150\ m\ \times 1\,000 = 150\,000\ mm$
   j) $25\ l\ \times 1\,000 = 25\,000\ cm^3$
   k) $0{,}805\ Kg\ \times 1000 = 805\ g$
   l) $225\ ml\ \div 1000 = 0{,}255\ l$
   m) $(13°F - 32)\ \div 1{,}8 = -10{,}56\ ℃$
   n) $0{,}69\ Km\ \times 1000 = 690\ m$

3. a) $13\ days\ \times 24 = 312\ hours$
   b) $75\ days\ \div 30 = 2{,}5\ months$
   c) $16\ minutes\ \times 60 = 960\ seconds$
   d) $561\,600\ minutes\ \div 60$
   $= 9\,360\ hours\ \div 24$
   $= 390\ days\ \div 30$
   $= 13\ months$
   e) $3\ years\ 3\ months = (3\ \times 12) + 3$
   $= 39\ months\ \times 30\ days$
   $= 1\,170\ days$
   f) $12\,960\,000\ seconds\ \div 60$
   $= 216\,000\ minutes\ \div 60$
   $= 3\,600\ hours\ \div 24$
   $= 150\ days$
   g) $2\,073\,600\ seconds\ \div 60$
   $= 34\,560\ minutes\ \div 60$
   $= 576\ hours$
   h) $144\,540\ hours\ \div 24$
   $= 6\,022{,}5\ days\ \div 365$
   $= 16{,}5\ years$
   $= 16\ years\ 6\ months$
   i) $1\,095\ days\ \div 365$
   $= 3\ years$
   j) $10\ years\ \times 365$
   $= 3\,650\ days\ \times 24$
   $= 87\,600\ hours\ \times 60$
   $= 5\,256\,000\ minutes$

4. a) $P = 2(l + b)$

$P = 2(92\ m + 55\ m)$

$P = 294\ m$

b) $P = \pi \times r$

$P = \pi \times 14{,}63m$

$P = 45.96\ m$

c) $Total\ length\ of\ lines = perimeter\ of\ the\ field + 3(width\ of\ the\ field) + 2(perimeter\ of\ the\ D)$

$Total = 294\ m + 3(55m) + 2(45.96m)$

$Total = 550{,}92\ m$

d) $Total\ length\ of\ lines\ for\ 4\ fields = 4(length\ for\ 1\ field +$

$Total = 4(550.92\ m)$

$Total = 2\ 203{,}68\ m$

5. a) $x = 3{,}85\ l + 90\ l + 105\ l + 3{,}1\ l + (2 \times 70\ l) + 76\ l$

$x = 417{,}95\ l\ per\ day$

$3850\ ml = 3{,}85\ l$

$3100\ ml = 3{,}1\ l$

b) $105\ l \div 3 = 35\ l\ per\ shower$

c) March has 31 days

$total\ consumption\ for\ march = 31 \times 417{,}95\ l$

$total\ consumption\ for\ march = 12\ 956{,}45\ l$

d) $Cost\ for\ March = \frac{12\ 956{,}45l}{1000} \times R\ 5{,}56 = R\ 72{,}04$

e) They can switch to only showering and not use the bath.

They can try to wash dishes all at once instead of washing only 1 or 2 dishes at a time.

They can ensure that they wash a full load of washing when they use the washing machine instead of washing small loads of clothes in the washing machine.

They can put a $2l$ cooldrink bottle full of water into the cistern of the toilet, this will reduce the water used by flushing.

Or any other reasonable answer.

6. a) $12\ oz\ chocolate\ chips \times 28{,}3495 = 340{,}19\ g\ chocolate\ chips$

$8\ oz\ caster\ sugar \times 28{,}3495 = 226{,}80\ g\ caster\ sugar$

$12\ oz\ plain\ flour \times 28{,}3495 = 340{,}19\ g\ plain\ flour$

$8\ oz\ butter \times 28{,}3495 = 226{,}80\ g\ butter$

b) $180\ cookies \div 24 = 7{,}5\ batches\ of\ cookies$

c) $7{,}5\ batches \times 2\ eggs = 15\ eggs$

d) $Profit = Income - Expenditure$

$Profit = (48 \times R\ 5{,}00) - (R51{,}50 \times 2)$

$Profit = R240{,}00 - R103{,}00$

$Profit = R\ 137{,}00$

e) $Cost\ Price\ for\ 1\ cookie = R\ 51{,}50 \div 24$

$Cost\ price\ for\ 1\ cookie = R\ 2{,}15$

f) $Profit = Income - Expenditure$

$Profit = (24 \times R\ 4{,}00) - R\ 51{,}50$

$Profit = R\ 96{,}00 - R\ 51{,}50$

$Profit = R\ 44{,}50$

7. a) $4.15\ cm \times 165 = 684.75\ Km$

b) $measured\ distance\ is\ 2{,}9\ cm.\ (2{,}8 - 3{,}0\ cm\ acceptable)$

c) $Distance\ in\ Km = 2{,}9\ cm \times 165 = 478{,}5\ Km$

d) $Distance = 3{,}8\ cm \times 165 = 627\ Km$ $(3.7cm - 3.9cm\ acceptable)$

e) $Distance\ from\ Ladysmith \rightarrow Bloemfontein = 2\ cm \therefore 330\ Km$

$Distance\ from\ Bloemfontein \rightarrow Johannesburg = 2.2cm \therefore 363\ Km$

$Distance\ in\ total = 330\ Km + 363\ Km = 693\ Km$

f) The direct route does not take the roads into account. There is no road that goes in one straight line from Ladysmith to Bloemfontein. The route is not direct and therefore it is longer.

g) Own opinion. *(a possible answer is included below)*
Starting in Pretoria I would travel to Polokwane then to Upington, then De Aar, then to Durban and then to Richard's Bay before returning to Pretoria. This is because this route does not make me go back past places I have been to unnecessarily and it is relatively direct.

8. a) $ratio\ of\ water = 180\ ml\ \div 5 = 36\ ml$

b) $3\ 000\ ml\ juice\ \div 6 = 500\ ml\ of\ concentrate$

c) $300\ ml\ \times 30\ players = 9\ 000\ ml$

$9\ 000\ ml\ \div 1000 = 9\ l\ of\ juice\ for\ 30\ people$

d) $9000\ ml\ \div 6 = 1500\ ml$

$\therefore He\ must\ buy\ 2\ l\ of\ juice\ concentrate\ (cant\ buy\ less\ than\ an\ entire\ litre)$

$2\ l\ juice\ \times R\ 17.99 = R\ 35{,}98$

e) $Profit = Income - Expenditure$

$Profit = (70\ \times R2{,}50) - R71{,}96$

$Profit = R\ 175{,}00 - R\ 71.96$

$Profit = R\ 103{,}04$

$Expenditure$:

$70\ \times 300ml = 21\ 000\ ml\ of\ juice\ made$

$21\ 000\ ml\ \div 6 = 3\ 500\ ml\ concentrate$

$\therefore 4\ conc\ \times R\ 17.99 = R\ 71.96$