EXAM FEVER

Grade 12

MATHS LITERACY

TEACHER'S GUIDE

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1. <u>Measurement</u>
A. Converting Units
Question 1
1.1   0,025m
1.2   23 005ml
1.3   45ha

Question 2
6000 ÷ 4,546 = 1319,84 gallons

B. Recipes
Question 1
1.1   1250ml
1.2.1 226,8g
1.2.2 255,15g
1.2.3 187,5ml
1.2.4 8 eggs

Time
Question 1
1.1   43 minutes
1.2   11:57
Question 2
Time = 34 ÷ 85   12: 12 – 24 minutes = 11:46
    = 0,4 h × 60
    = 24 min   **Mr Son did not leave at 11:40**
Question 3
3.1   724km
3.2   Time = 1h + 45÷60 = 1,75h
    Average speed = <u>189</u>
           1,75
       = 109km/h
Question 4
4.1   Difference in time = 1,56 – 1,2 = 0,36 s
    % increase in reaction time = <u>0,36 × 100</u>
             1,2
      = 30%
4.2   36,34m
Question 5
5.1   90km
5.2   08:45
5.3   a) 60km/h
     b) 96km

Question 6

6.1   33 minutes

6.2   6 minutes

6.3   2500m

6.4   500m/min

Timetables

Question 7

7.1   50 minutes

7.2   Time = 55min ÷ 60 = 0,92h

Speed = $\underline{320,2km}$

0,92h

= 348,04km/h

7.3   SA 8809

C. Length and Distance

Question 1

1.1   131,25cm

1.2   15cm

Question 2

**Length of certificate is 29,5cm

2.1   10cm

2.2   24,5cm

2.3   78,5cm^2

2.4   101cm

2.5   619,5cm^2

Question 3

3.1   290m

3.2   307,92m^2

3.3   4,90 hours

D. Mass and Volume

Question 1

1.1   BMI = 24

1.2   Normal weight

Question 2

2.1   6 months to 2 years

2.2   8kg

2.3   12 months to 15 months (one age in this range).

2.4   February

2.5   BMI = $\dfrac{weight}{height^2}$ $h^2 = \dfrac{112}{19,5}$ $h = \sqrt{0,5743}\ldots$

$19,5 = \dfrac{11,2}{h^2}$ = 0,5743…   = 0,758m

Question 3

3.1   33,75ml

3.2   ****Change 13,5ml to 13,5%**

        $\frac{13,5}{100} \times 1000 = 135ml$

Question 4

4.1   90 000cm^3 4.2   Height of liquid = $\frac{\text{volume of liquid}}{\text{length} \times \text{breadth}}$

Question 5

Volume = 1,733m^3 = $\frac{3000cm^3}{50 \times 40}$

                                                  = 1,5cm

Question 6

6.1   113 112cm^3

6.2   113 112 cm^3 ÷ 1000 = 113,112 ℓ

        1 basin = ½ capacity = 56,556 ℓ

        Therefore 2 × 56,556 × 3 = 339,336 ≈ 339,34 ℓ

6.3.1   339,34 ÷ 9 = 37,70ℓ

6.3.2   YES or NO with logical reasons

E. Temperature

Question 1

180℃

Question 2

2.1   C

2.2   15℃

Question 3

3.1   27℃

3.2   Harare or New Delhi

3.3   Amsterdam

3.4   Harare

3.5   10℃

3.6   55,4℉

F. Perimeter, Circumference and Area

Question 1

1.1   18m

1.2   18m^2

1.3   Dimensions of path + flower bed : Length = 7m Breadth = 4m

        Area of path and flower bed = 7 × 4 = 28m^2

        Area of path = 28m^2 − 18m^2

                   = 10m^2

Question 2

2.1   62m

2.2   81m

2.3   194,8m

2.4   3019,46m^2

Question 3

5 litres of paint can cover 5ℓ × 1000 = 5000ℓ × 50 = 250 000cm^3

<u>Display boards</u>: 48 × 25mm = 1200mm = 120cm

36 × 25mm = 900mm = 90cm

Area = 120 × 90 = 10 800 cm^3

Spray paint is enough for : <u>250 000</u> = 23,148 boards

10 800

Therefore 5ℓ is not enough.

Question 4

4.1   Radius of place mat = 30 ÷ 2 = 15cm

Radius of tablecloth = 4 × 15 = 60cm

Circumference = 377,04cm

4.2   80 beaded segments

G. Theorem of Pythagoras

   Question 11

   Length of ladder = 2,29m

H. Surface Area and Volume

   Question 1

   SA = 1099,7cm^2

   Question 2

   ***Change radius to 5cm**

   2.1   SA of cylindrical holder = 2πrh

= 2 × 3,142 × 5 × 15

= 471,3cm^2

   2.2   SA of rectangular holder = 2lh + 2bh

= (2 × 10 × 15) + (2 × 10 × 15)

= 600cm^2

   Question 3

   **Change length to 6cm

   3.1   6,928cm^2

   3.2   TSA = 2 × Area of triangular face + 3 × length × width

= 2 × 6,928 + 3 × 6 × 4

= 85,86cm^2

Question 4

Curved surface area of cylinder

= π × diameter × height

TSA of sticker for cylinder A

= [(π × d) + 1] × height

= [(3,142 × 30) + 1] × 30

= 2857,8cm^2

TSA of sticker for cylinder B

= [(π × d) + 1] × height

= [(3,142 × 40) + 1] × 20

= 2533,60cm^2

Therefore , cylinder B requires less material.

Question 5

5.1   To protect the base of the drum from burning.

        To bring the fire closer to the grid.

5.2   **Volume = 108ℓ

        1ℓ = 1 000 000mm^3 = 0,001m^3

        Volume of braai drum = 108ℓ × 1 000 000mm^3

                            = 108 000 000 mm^3

         Radius of braai drum = $\underline{572}$ = 286mm
                                   2

        Volume of braai drum = ½ πr^2 × h

           108 000 000 mm^3 = ½ × 3,142 × (286)^2 × h

                        h   = $\underline{2 × 108 000 000mm^3}$

                                   3,142 × (286mm)^2

                             = 840,451

                             ≈ 841mm

        Length is 1 % more than height of drum.

        1% of 841 = 8,41mm

        Length of grid = 841mm + 8,41mm

                       = 849,41mm

                       ≈ 850mm

Question 6

6.1   Volume = 7,5m^3 = 7,5kl

6.2   SA = lb + 2lh + 2bh

          = 18,5m^2

Question 7

7.1 Above the ground is a higher security risk/Safety reasons/Water stays cool.

7.2 1ℓ = 1000cm^3

8000ℓ = 8 000 000cm^3 = 8m^3

Volume of cylindrical tank = π × r^2 × length

$$8m^3 = 3{,}142 \times r^2 \times 2{,}9$$

$$r^2 = \frac{8m^3}{3{,}142 \times 2{,}9}$$

$$= 0{,}87798239\ldots$$

$$r = \sqrt{0{,}87798239}$$

$$= 0{,}937m$$

Diameter = 1,874m

2. <u>Finance</u>

A. Taxation

Question 1

1.1 R44,85

1.2 7 bangles

1.3 R3,28

1.4 R145,61

Question 2

2.1 July 2013

2.2 Water and sewerage; Refuse removal

2.3 20/12/2016

2.4 12,00kl ÷ 23 days = 0,522kl

2.5 Water – The amount of water consumption is not the same every month.

2.6 A : R690 000 × R0,0069160 ÷ 12

= R397,67

B : R397,67 – R115,27

= R282,40

2.7 R298,36 ÷ 463

= R0,644406475 ≈ R0,64

2.8 R919,33

2.9 Rounding up

Question 3

3.1 R1152 + R816 + R424   Member's contribution = $^1/_3$ × 2816

= R2816   = R938,67

3.2.1 Union membership = R35

Pension = $^{7,5}/_{100}$ × 7986,50 = R598,99

PAYE = (R7986,50 – R4750) × 18% = R582,57

Medical Aid Contribution = R938,67

Total deduction = R35 + R598,99 + R582,57 + R938,67

= R2155,23

3.2.2   Net salary = R7986,50 − R2155,23
                = R5831,27
        Net annual salary = R5831,27 × 12
                = R69 975,24

Question 4

4.1   96264 + 36%(450 000 − 406 400)   Monthly tax = R98 460 ÷ 12
      = R111 960   = R8 205
      Less rebate = R111 960 − R13 500
              = R98 460

4.2   Tax credits = R268 + R268   4.3   Net monthly tax = R8 205 − R572
              = R572   = R7 633

Question 5

5.1   Employer provides people with a job or work for pay/ Employer is the company
      or individual who offers work opportunities for pay.
5.2   To give an employee a short term relief should he/she become unemployed.
5.3.1   R4 736,88
5.3.2   Total UIF = R125,44

Question 6

Income Tax = 147 996 39%×(663 000 − 550 100) = R192 027
Total tax after rebate = R192 027 − R13 500 − R7 407
                = R171 120

B.   Tariff Systems

   Question 1
   1.1 R0
   1.2   22 ½ ℓ
   1.3   12kl − 6kl = 6kl ∴ amount payable is R45.
   Question 2
   2.1   Cost = R44,82 + (2 × R8,22) = R61,26
   2.2   R51, 54
   Question 3
   ****The graph below shows the cost of parking at a garage that is open 12 hours
   daily.**
   3.1   1 hour
   3.2   3-4 hours
   3.3   R20
   3.4   R7
   Question 4
   4.1   R465
   4.2   Queenstown; King Williams Town
   4.3.1   Port Elizabeth to Bloemfontein is R435.
        Cost = R755 − R435 = R320
   4.3.2   King William's Town
   4.4   Single = R410 Double = R820 ; 1 year = R820 × 12 = R9 840

Question 5

5.1 R17,76 + ($1/3$ × R17,76) = R23,68

5.2 2017: Sunday work wage = 19,39 × 150% = R29,09
  Total wage = 3 × 9 × R29,09 = R785,43 OR

  2016: Sunday work wage = 17,90 × 150% = R26,85
  Total wage = 3 × 9 × R26,85 = R724,95

5.3 a) 16,40 + ($3/100$ × 16,40) = R17,76
  b) 100 + 8,3 = 108,3%
  $\dfrac{21,93}{108,3\%}$
  = R20,25

5.4 R2 540

Question 6

Number of litres of petrol = $\dfrac{7,5 × 40}{100}$ = 3ℓ   Cost of petrol = 3 × R9,82 = R29,48
  ∴ R29,48 × 20 days = R589,60

Car Maintenance : (40km × R0,70) × 20   Total cost = R589,60 + R560
  = R560   = R1 149,60

C. Income and Expenditure; Budgets; Profit and Loss

Question 1

1.1 Copyright payments; Advertising costs; bursary; grants.

1.2 R63 – (R27,02 + R21, 02 + R23, 78) billion = R11,11 billion
  Percentage donations = $\dfrac{11,11}{63}$ × 100 = 17,6%

1.3 $\dfrac{0,7}{100}$ × 54 100 000 000 = 378 700 000 million or 378,7 million.

1.4 Difference = income – expenditure
  = R63 billion – R54,1 billion
  = R8,9 billion or R8 900 million or R 8 900 000 000

1.5 a) % increase = $\dfrac{\text{R70,9 billion – R54 billion}}{\text{R54 billion}}$ × 100
  = 31,296%

  b) 7 + 118 = 125
  $7/125$ × Total budgeted income = R70,9 billion
  Total budgeted income = R70,9 billion ÷ $7/25$
  = R1 266,07 billion
  = R1 266 billion

Question 2

2.1 R3 718,75

2.2 R6 906,25

2.3 R3 500 + (R18 × 21) + R135 + R250 + ($10/100$ × 10 625) = R5 325,50

2.4 R1 580,75

2.5 R1 259 + R500 = R1 759   R1 580,75 – R1 759 = –R178,25
  No, since he is short of R178,25.

9

Question 3

3.1 Replacing a geyser/Garden services

3.2 15%

3.3 R3 000

3.4 R4 500

Question 4

4.1 1 March 2012 to 28 February 2013

4.2 Local Municipality subsidy

4.3 Total income = R443 520   Percentage = 69,5%

4.4 R209,32

4.5 R443 520 – R397 019 = R46 501

     The Lighthouse Foundation made a profit.

Question 5

5.1 R1 050 × 6 = R6 300

5.2 Total cost in rands = (60 × 4 × number of breakfasts) + (90 × 4 × number of lunches) + (120 × 4 × number of suppers)

5.3 Total cost = (60 × 4 × 5) + (90 × 4 × 4) + (120 × 4 × 5)

         = R5 040

D. Cost Price and Selling Price

Question 1

1.1 R0,75

1.2 2 packets × R6 = R12   Profit = R12 – R9 = R3,00

Question 2

**Swap labels for graph i.e. In-store purchases and Internet purchases

2.1 It is convenient/cheaper/purchases are delivered to you.

2.2 Electronics: 51% − 43% = 8%

     Sports Equipment: 44% − 36% = 8%

2.3 Any item where in-store graph is higher than the internet graph with a valid reason e.g Electronic/Groceries/Jewellery

Question 3

3.1 a)   Return distance = 2 × 45km = 90km

            90km is between 50km and 90km ∴ cost = R800

      b)   Return distance = 100km + 36km

            Cost = R800 + (R36 × 5) = R980

3.2 R800 + (number of km over 100km × 5)

3.3 Distance travelled = $\underline{\text{R1 650– R800}}$ + 100km = 270km

                              R5

E.   Break-even Analysis

Question 1

1.1   a)   R750

     b)   Loss

     c)   10

     d)   At the break-even point the cost to make 10 toys is equal to the income received when 10 toys are sold.

 1.2   % profit = $\frac{400}{850}$ × 100 = 47,06%

Question 2

2.1   a)   R50 + R35 + (2 × R10) = R105

     b)   R62 500

2.2   A = R87 500 ÷ 125 = 700   B = $\frac{800 \times 125}{1000}$ = 100

2.3   a)   Number of sets = 500

         Income at break-even point = R62 500

     b)   Profit = Income − Expenses

         R6 000 = (125 × no. of sets) − (10 000 + 105 × no. of sets)

         No. of sets = 800

F.   Interest; Hire Purchase

Question 1

1.1   R235 891

1.2 1st year = 51 600 − ($^{13,5}/_{100}$ × 51 600) = R44 634

       2nd year = 44 634 − ($^{13,5}/_{100}$ × 44 634) = R38 608,41 ≈ R38 600

Question 2

2.1 a) R2 429,10

    b) R269,90 + (R177,53 × 24) = R4 530,62

2.2   **Suppose Thandi takes a loan from ABC Bank for the full cash price of the dishwasher. She is charged an interest rate of 18% compounded per annum and agrees to repay the loan over two years.**
Calculate the total amount paid back after two years.

     1st year: 2 699 + ($^{18}/_{100}$ × 2 699) = R3 184,82

     2nd year:3 184,82 + ($^{18}/_{100}$ × 3 184,82) = R3 758,09

Question 3

3.1   3 ½ years

3.2   R45 286,92

3.3 $^{15}/_{100}$ × 29 999 = R4 499,85

G. Banking, Loans and Investments

Question 1

1.1   7,63

1.2   8,35

1.3 Monthly = R11 087,50

Question 2

2.1   31 or 32

2.2   Total credit = −R37,81 + (−R200) + (−R0,01) = −R237,82

Total debit = R200 + R400 + R31 716,69 + R10 770,00 = R42 690,69

Closing balance = R42 690,69 + (−R237,82)

= R42 452,87

2.3   Safety reasons/Prevent fraud/Confidentiality

2.4   Insurance premium = R42 452,87 ÷ R1000 = 42, 45287 ≈ 43

Insurance cost = 43 × R3,50 = R150,50

2.5   The bank owes Mr Son R37,81 or the account has a credit balance.

2.6   Mr Son does not have large amounts of cash to purchase expensive goods/ Safety reasons.

H. Inflation

Question 1

1.1   July and August

1.2   February; May; September; December

1.3   October and November or September and October(1 mark) and November and December(1 mark).

1.4   39% − (−4%) = 8%

1.5   Cost = 150 − (8% × 150) = R138

Question 2

2.1   Let x be the price of the bicycle in 2008.

Price of bicycle : x + 5,8% of x = 1 586,95

1,058x   = 1 586,95

x   = R1 4 99,95

2.2   Cost after 6 years(from 200 9 to 2014) = R7,64

Question 3

3.1   Draw graph

3.2 a)   The graphs show a similar trend of month-on-month changes in prices e.g. An increase from May to November or a decrease from January to February.

3.2 b)   Prices are generally high in December and January due to the festive season and tend to drop in February/ Prices tend to increase in winter months(May, June and July) as fruit becomes scarce.

12

I. **Exchange Rates**
   Question 1
   R110,35 × 9,48 = DZD 1046,12
   Question 2
   1 US$ = 0,72025€ ∴ 150 US$ = 108,0375€
   1 Russian rouble = 0,0230344€ ∴ 108,0375€ = $\frac{108,0375}{0,0230344}$ = 4 690,27 rouble

   Question 3
   3.1   20 × 0,95 = 19 BWP
   3.2   Accommodation = 3 × 360 286 = 1 080 858 ZMK
        ∴ $\frac{1\ 080\ 858}{681,07}$ = R1 586,999 ≈ R1 587
   Question 4
   4.1   R6 235,93
   4.2   £7,02

3. <u>Data Handling</u>

A. **Developing questions ; Samples and Populations**
   Question 1
   1.1   Limpopo and Western Cape
         Difference = 30,1% − 6,7% = 23,4%
   1.2   (100% − 9,1%) of 911,118
         = 828 206,262 ≈ 828 207 or 828 206
   1.3   Difference in % = 61,8% − 13,2% = 48,6%
         Difference in usage = 48,6% × 264 654 = 128 621,844 ≈ 128 622
   1.4   1 388 957 = $\frac{x + 11\ 560\ 207}{9}$
         x + 11 560 207 = 12 500 613
                 x   = 940 406
   1.5   The provinces with high cellphone usage have a corresponding relativity high computer usage.(Any other justification)

B. **Collecting Data**
   Question 1
   1.1   17,634 millions of tons
   1.2   Iran
   1.3   Saudi Arabia

Question 2

2.1   4,4%

2.2 (a)   4 720 000 ÷ 10,0% = 47 200 000

   (b) 45,0% × 621 600 ≈ 279 700

   (c)   5 060 000 ÷ 48 653 800 = 10,4

2.3   1 : 0,1

Question 3

3.1 3 180 118

3.2   79,3%

3.3   1 : 3

3.4   244 282; 609 029; 760 029; 784 347; 922 171; 1 120 567; 1 762 494; 1 956 497;
   4 013 463

3.5 Northern Cape

C. Classifying and Organising Data

Question 1

1.1 (a) 20%   (b) 100%

1.2   Answers to be done on the frequency table.

D. Summarising Data

Question 1

1.1 Mean = 38

1.2 a) Range = 13

   b) Mode = 35; 37

   c) Median = 35

Question 2

2.1 7,51; 7,51; 7,64; 7,71; 7,81; 7,91; 8,05; 8,22

2.2 7,51m

2.3 0,71m

2.4 7,73m

2.5 Charles

Question 3

3.1 6;7;8;8;9;11;11;12;14;14;14   3.2 Dog K

3.3 14   3.4 8

3.5 6   3.6 5 :2

Question 4

4.1 35;39;39;60;63;84;93;107;117;120;126;142

4.2   July/7th month

4.3 9

4.4 April/4th month

4.5 May and July or 5[th]and 7th month

Question 5

5.1   No data was available for Japan/Japan did not provide data.

5.2   Range = Maximum – Minimum

       463 223 = Maximum – 4612

       Maximum = 463 223 + 4612

                 = 467 835

5.3   76 434

5.4   No mode

5.5   7 countries

Question 6

6.1   46   6.2   56

6.3   36   6.4   20

Question 7

7.1   India

7.2   2,34

7.3   Countries with high rankings are developed(rich 1st world) as well as underdeveloped/developing(poor,3rd world).

7.4   India: Mean Daily wage = 236,51 ÷ 93,76% ≈ 252,25 rouble

       SA: Mean Daily wage = 237,35 ÷ 26,20% ≈ 905, 92 rouble

       Difference = 905,92 – 252,25 = 653,67 Russian rouble

7.5   Range = 425,52 – 21,44 = 404, 08 Russian rouble

       1 Russian rouble = 0,016 euro

       ∴ 404,08 Russian rouble = 404,08 × 0,016 euro = 6,46528 euro

       1 South African rand = 0,070 euro

       ∴ 6,46528 ÷ 0,07 = R92,36

       ∴ Learners solution is incorrect.

Question 8

8.1 a) A = 37 + 15 = 52

    b) 34 = $\frac{494 + 2B}{16}$

        2B = (34 × 16) – 494

           = 50

        ∴B = 25

    c) Median = 34,5

8.2   The mean, median and range for 7 February are less than those for 14 February. This means that his customers had to wait for a shorter time on 7 February than 14 February.

       It could mean that more people came to eat at this eating place on 14 February because of Valentine's Day or he had less staff on the 14th.

Question 9

9.1 Numerical

9.2 50%

9.3 68

9.4 56

9.5 50

9.6 66

9.7 $70 = \dfrac{174 + H}{26}$

1820 = 1741 + H

H = 1820 – 1741

= 79

Question 10

10.1 75th percentile

75% of two-year old boys weigh less than him or 25% of 2 year old boys weigh more than him(13,6kg)

10.2 50th percentile

50% of 33 month old boys are shorter than him or 50% of 33 month old boys are taller than him.

Question 11

11.1 a) $P = \dfrac{67 + 78}{2} = 72{,}5\%$ $R = 99 - 59 = 40$

$Q = \dfrac{1029}{14} = 73{,}5\%$

b) Bathini High – The highest mark was attained in this school and their lowest mark was still higher than the lowest mark of Vuka Secondary.

11.2 a) 90%; 95%; 98%

b) 4 learners

E. Representing Data

Question 1

1.1   822

1.2   Bar graph

Question 2

21 + 30 + 9 = 60

Question 3

3.1   Bar Graph/Single Bar graph

3.2   Three hundred and sixty one thousand nine hundred and forty eight.

3.3   Question five.

3.4   Average time per mark

= 180 ÷ 150 = 1,2min

Question 4

4.1   18,2%

4.2   2 245 227

4.3   A = 13,9% ; B =12 036 739

Question 5

5.1.1   394 million

5.1.2   55,12 million

5.1.3   46%

5.2.1   Cellphone/i-pad

5.2.2   30%

5.2.3   88%

5.2.4   28 620 000

Question 6

6.1   Eastern Cape

6.2   Supporting the needy/poor/sick/elderly/orphaned

6.3   No. Two categories/types or topics of data are given or there are too many sectors(18)
         to be accurately/easily represented using a single pie chart.

6.4   Total number of citizens receiving social grants = 17 149 931

         ∴ Limpopo % = $\frac{2\ 405\ 846}{17\ 149\ 931}$ × 100 = 14,03%

6.5   Gauteng: 1 : 0,5006   Western Cape: 1 : 0,664672
         ∴ Gauteng

Question 7

Draw a Vertical Stack Graph

Question 8

Draw a Histogram

Question 9

9.1   10

9.2   North Atlantic

9.3   Line graph

9.4   Western Pacific: total storms = 39 + 30 + 52 + 34 + 40 = 195
         Damages in million USD = 10 200 + 8 410 + 22 800 + 6 080 + 10 600 = 58 090
         North Atlantic: total storms = 12 + 9 + 13 + 19 + 19 = 72
         Damages in million USD = 590 + 232 + 1 510 + 75 000 + 21 000 = 98 332
         ∴ Not a valid statement.
         Western Pacific had the most storms but North Atlantic had the greatest amount of
         damages.

Question 10

10.1   16%

10.2   Liberty/Club E

10.3   12% of 300 = 36

F.   Interpreting and Analysing Data
Question 1
1.1   Vivesh's sales in 2012 was more than double his sales in 2011 or there was an increase in percentage sales from 12 % to 28%.
1.2   He read Mabel's and Henry's combined sales of 2011 and 2012 as the sales for 2012.
Henry's sales for 2012 were only 25%, Mabel's sales were 21% and the person with the highest sales was Vivesh with 28%.
1.3   Different types of bar graphs/Line graphs/Pie charts

4. Probability
A.   Expressions of Probability
Question 1
1.1   Certain
1.2   Impossible
1.3   Fifty/fifty
Question 2
2.1   C
2.2   Likely/less less likely

B.   Calculating Probility
Question 1
1.1 $^{13}/_{50}$
1.2 $^{37}/_{50}$
1.3 $^{0}/_{50}$
Question 2
P(U) = $^{3}/_{12}$ = 0,25
Question 3
3.1   % using other languages = 100% − (64,4% + 11,9% + 9,1%) = 14,6%
Number speaking other languages = 14% of 2 965 600 = 432 977,6 ≈ 432 978
3.2   100% − 21% = 79%
Question 4
4.1   Total number of customers = 40 ÷ 20% = 200
15% of 200 = 30 customers
4.2   10 + 15 + 20 + 30 = 75% = 0,75
Question 5
5.1   1 learner since $^{29}/_{100}$ × 30 = 96,76%
5.2 $^{65}/_{134}$ × 100 = 48,5%
5.3   New −age Secondary School performed better. New-age Secondary entered 153 learners for the matric examination and more of them obtained a degree pass.

Question 6

6.1   P(blood type O) = (39 + 6) = 45% or $^9/_{20}$

6.2   AB⁺

6.3   No, it is **not** most likely. Can only receive blood from own blood group
       i.e P = $^1/_8$ ∴ **Not** most likely.

B. **Prediction**
Question 1
Forecasters can only **state** a probability based on the fact that it snowed on 80% of a day in the past with similar weather conditions. This does not mean that it will definitely snow. There is also a 20% probability of no snow for the southern Drakensberg.

C. Representations for determining Possible Outcomes
   1. Tree Diagrams
      Question 1
      1.1 On tree diagram
      1.2 a) $^1/_9$ c) $^5/_9$
           b) $^4/_9$
      Question 2
      2.1   On tree diagram
      2.2 $^2/_8$ = 0,25
   2. **Contingency Tables**
      Question 1
      1.1 $^{60}/_{302}$ 1.2 $^{137}/_{302}$
      Question 2
      2.1   A = 19
             B = 15
             C = 61
      2.2 a) $^{40}/_{157}$
           b) $^{56}/_{157}$
           c) $^{15}/_{157}$
           d) $^{45}/_{157}$

D. Evaluating Expressions in Probability
      Question 1
      1.1   30%
      1.2   No. We don't know the actual number of woman involved in the survey,
            or 70% is not a high enough percentage to make it a leading brand.

5. <u>Maps, Plans and other Representations of the Physical World</u>

A. Scale
Question 1

1.1 1 unit on the image/plan represents 100 of the same units in reality.

1.2 50 units on the image/plan represents 1 unit in reality.

Question 2

2.1 5cm : 10km

2.2 5cm on the map/plan represents 10km in reality.

2.3 5cm : 10km

 60,5cm : x

 x = (60,5 × 10) ÷ 5 = 121km

Question 3

<u>For scale 1 : 3</u>

Total length of the set = 71cm + 34 cm = 105cm

Scaled length of the set = 105 ÷ 3 = 35cm

Length of the page is 29,6cm(does not fit)

Width of the T-shirt = 57cm

Scaled width = 19cm ∴ The scale 1 : 3 should not be used.

<u>For scale 1 : 4</u>

Total length of the set = 71cm + 34cm = 105cm

Scaled length of the set = 105 ÷ 4 = 26,25cm

Length of the page is 29,6cm(does fit)

Width of the T-shirt = 57cm

Scaled width = 14,25cm ∴ The scale 1 : 4 should be used.

B. Maps
B1: Maps of Small Areas
Question 1

1.1 Row 5 Column 2

1.2 3 or 4

1.3 South East

1.4 32 × 0,75m^2

B2: Maps of Large Areas(Street Maps)
Question 1

1.1 A1

1.2 a) Turn right into Montagu Drive. Go straight until the intersection of Montagu and East Street. At the intersection turn left. Mark's house can be found on the right hand side on East Street.

 b) 0,029km × 100 = 2,9cm   **x** = (2,9 × 16000) ÷ 100 000 = 0,46km

 1cm = 16 000cm

 2,9cm : **x**

c) South/ South West

d) North West

Question 2

2.1 C3

2.2 South East

2.3 a)   *Drive along Selby Msimang Road in a north-easterly direction.

*At the traffic lights turn right into Sutherland Road.

*Turn right into F.J. Sithole Road.

*Turn left into Nkugwini Road.

*The entrance to the stadium is on the left.

b)   Approximately 2,6km

B3: National Road Maps

Question 1

1.1 a)   4,5cm

b)   2,2cm = 300km   .....Also accept 2cm = 300km

4,5cm = x

x = (4,5 × 300) ÷ 2,2

= 613,64km ≈ 614km

1.2 Time = $\frac{614}{110}$

= 5,58 h

= 5 hours and 35 min

8 : 15 + 5 : 35 = 13 :40   ∴ No, they arrived earlier than the predicted time.

1.3 a)   Half tank will cost = $\frac{60 \times 10,12}{2}$ = R303,60

∴ 30 ℓ cost R303,60

R455, 40 ÷ R10,12= 45ℓ

∴ The fuel gauge was not working properly.

b)   (15 × 100) ÷ 9 = 166,67km

1.4 Take the N2 to Durban.

Take the N3 to Harrismith.

Take the N5 to Bloemfontein.

Take the N8 through Kimberley

Take the N10 until Kimberley.

1.4   Rustenburg

B4: **Provincial Road Maps**

Question 1

1.1   C2

1.2   R617; R56

1.3   South East

1.4   From Herbetdale B&B, turn right into Hope Street. Continue straight. At the intersection of Coulter Street and Hope Street, turn left. Continue a few metres and turn right into
Main Road. The museum will be on your left.

1.5   ***The scale on the map is 1 : 20 000
Actual distance between the train station and the Town Hall is 1 500m.

B5: Strip Route Maps
Question 1
1.1   N10 and N2
1.2   Mountain Zebra N.P
1.3   Kirkwood
1.4   Distance = 24km + (270km − 195km) + 24km = 234km

B6: Elevation Maps
Question 1
1.1 $\pm$ 20km
1.2   700m
1.3   Uphill

B7: Distance Table
Question 1
1.1   1 133km
1.2   Durban to East London = 647km   Total distance = 647km + 982Km = 1 629km
East London to JHB = 982km

C. Plans
C1: Floor Plans
Question 1
1.1   1 : 300
1.2   Total Area = $(18 \times 12) + (9 \times 6)$
                = $216m^2 + 54m^2$
                = $270m^2 - 50m^2$
                = $220m^2$
1.3   Area of 1 table = $0,5 \times 0,5 = 0,25m^2$
Number of tiles required = $220 \div 0,25$
                             = 880 tiles + (5% of 880)
                             =924 tiles
1.4   4 : 1
Black = $^4/_5 \times 924$
        = $739, 2 \div 12$
        = 61, 6
        $\approx$ 62 boxes

Question 2

2.1 South

2.2 Area of window = 1, 60m × 1, 30m = 2, 08m²

Area of door = 2, 08m+ ($^9/_{100}$ × 2, 08m)

$\qquad$ = 2, 2672m²

Width of door = 2, 2672m² ÷ 2, 14m

$\qquad$ = 1, 06m

2.3.1 Area of bedroom 2

= 2(Area of W wall) + 2(Area of S wall) – area of window – area of door

= 2(3, 304m × 2,4m) + 2(2,984m × 2, 4) – 2,08m² – 2, 267m²

=15, 8592m² – 14, 3232m² – 4, 3472m²

= 25, 8352m²

≈ 25,84m²

2.3.2 Total area to be painted

= 25,84m² + 28,44m²

= 54,28m²

Amount of paint needed

= $\dfrac{54, 28}{4}$

= 13, 57ℓ

Number of 5ℓ cans = $\dfrac{13,57}{5}$ $\qquad\qquad$ Cost = R169,99 × 3

$\qquad\qquad\qquad$ = 2,714 $\qquad\qquad\qquad$ = R509,97

$\qquad\qquad\qquad$ ≈ 3 containers $\qquad$ ∴ Mrs Wongs estimation was

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ incorrect.

2.4 Total number of hours worked

= (6 + 6 × 1½) hours = 15 hours

Total labour cost = 15 × R35,90

$\qquad\qquad$ = R538,50

∴ The invoice amount was incorrect.

3.1 Length = 5 240 – (2 × 220) = 4 800mm

Width = 4 040 – (2 × 220) = 3 600mm

Floor area = 4 800 × 3 600 = $\dfrac{17\ 280\ 000mm^2}{1\ 000\ 000}$

$\qquad\qquad\qquad$ = 17,28m²

3.2 Area of ceiling board

= 2 400 × 900 = 2 160 000mm²

Number of boards needed

= $\dfrac{17\ 280\ 000mm^2}{2\ 160\ 000}$

= 8

∴ Needs more than 7.

3.3   2 × (4 800 + 3 600)
       = 16 800mm

3.4   16 800 ÷ 2000 = 8, 4
       Hence, 9 length cornices needed
       Total cost = (8 × R91,44) + (9 × R53,64)
              = R1 214,28
       ∴ The statement is correct.

C2: Elevation Plans
Question 1
1.1   7
1.2   70mm : 7 000m
          1 : 100
1.3   9 514mm
1.4 $39{,}54 - (^{72}/_{100} × 39{,}54) = 11{,}07m^2$
Question 2
2.1   3 750mm
2.2   3, 55m + 1, 7m + 2, 05m = 7,3m
2.3   Living room
2.4   Bedroom 2
2.5   Wash basin/sink/water basin/shower

C3: Instructions and Assembly Diagrams
Question 1
1.1   D; B; E; A; C
1.2   E or B

D. Models
Question 1
1.1   Volume 27,5cm × 15cm × 11,9cm
       = 4 908,75cm^3
Question2
2.1   Height of bottle = $\underline{143}$
                  102%
              = 140mm
2.2   Area of base of bottle = $3{,}142 × 29^2 = 2\ 642{,}42mm^2$
       Length of base of box = $\underline{105} × 58 = 60{,}9mm$
                            100
       Area of base of box = s^2
               = $60{,}9^2$
               = $3\ 708{,}81mm^2$
  Difference in area = 3 708, 81 − 2 642, 42
            = $1\ 068{,}07mm^2$
            = $10{,}68cm^2$ ∴ The dimensions satisfy the guidelines.

Question 3

3.1   35 ÷ 16, 5 = 2, 12 ≈ 2 layers

3.2   Number of can which can be packed lengthwise

= 56 ÷ 12, 6

= 4, 44

≈ 4

Number of cans which can be packed width-wise

= 41 ÷ 12, 6

= 3, 253

≈ 3

∴ Maximum number of cans

= 4 × 3 × 2

= 24

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