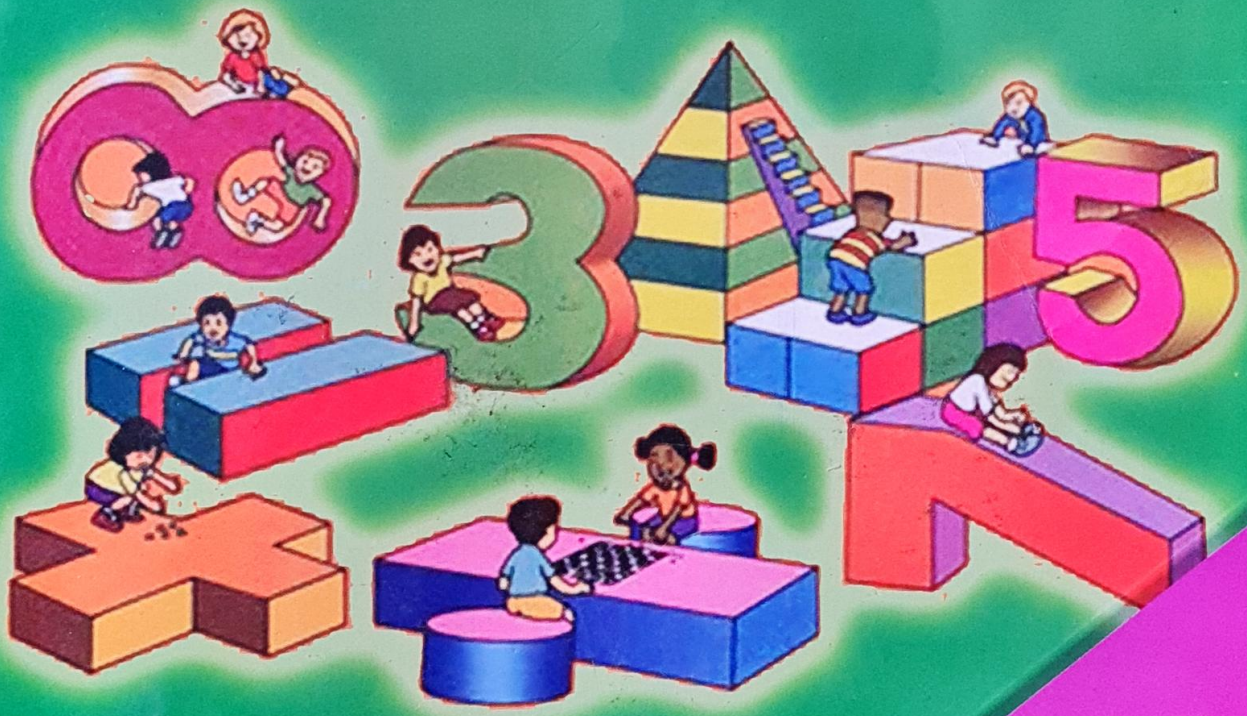
Somaliland National Examination & Certification Board

Mathematics

Workbook with Keys

For Primary Students



2019
Second Edition

BAABUSALAAM
General Trading Company

CHAPTER 1: NUMBERS

1.1. Multiple choice questions

1. The HCF of 32 and 48 is:

A. 4
B. 12
C. 8
D. 16

(SLNECB, 2006,2015)

2. The LCM of 21 and 84 is:

A. 21
B. 84
C. 168
D. 56

(SLNECB, 2006)

3. The HCF of 98 and 84 is:

A. 12
B. 21
C. 14
D. 42

(SLNECB, 2007)

4. The LCM 3, 5, 6, and10 is:

A. 15
B. 10
C. 30
D. 20

(SLNECB, 2007)

5. 14 is the square root of:

A. 164
B. 169
C. 196
D. 176

(SLNECB, 2009,2015)

6. Find the next two terms in the sequence shown below.

1, 3, 7, 15, 31, ____, ____

A. 53, 117
B. 63, 127
C. 73, 137
D. 83, 147

(SLNECB, 2009)

7. What is the least common multiple of 3, 6 and 27?
   A. 3
   B. 18
   C. 27
   D. 54

(SLNECB, 2010)

8. Find the next three terms in the given pattern: 3, 15, 75, ____, ____, _____.
   A. 375, 1800, 9375
   B. 325, 850, 3700
   C. 375, 1875, 9375
   D. 375, 1800, 3700

(SLNECB, 2010)

9. Change $(100)_2$ into base10:
   A. $(4)_{10}$
   B. $(5)_{10}$
   C. $(20)_{10}$
   D. $(40)_{10}$

(SLNECB, 2012)

10. When these numbers are added 60 + 800 + 20,000 + 900,000 we get this answer:
    A. 290,860
    B. 928,600
    C. 920,860
    D. 298,060

(SLNECB, 2013)

11. Which of the following numbers is **not** divisible by 11?
    A. 506
    B. 759
    C. 236
    D. 473

(SLNECB, 2013)

12. The product of $\sqrt{81}$ and $\sqrt{36}$ is:
    A. 4
    B. 52
    C. 44
    D. 54

(SLNECB, 2013)

13. Changing $(232)_5$ to base 10 equals:
    A. 94
    B. 67
    C. 75
    D. 86

(SLNECB, 2013)

14. Which of these is divisible by 8?

A. 434
B. 672
C. 785
D. 100

(SLNECB, 2014)

15. The lowest common multiple of 40, 32 and 16 is:

A. 80
B. 160
C. 320
D. 180

(SLNECB, 2014)

16. The difference of $\sqrt{169}$ and $\sqrt{144}$ is:

A. 25
B. 3
C. 15
D. 1

(SLNECB, 2014)

17. 473_5 when changed to base 10 is:

A. 241
B. 183
C. 138
D. 97

(SLNECB, 2014)

18. When these numbers are added 60+800+20,000+900,000 we get this answer:

A. 290860
B. 928,600
C. 920,860
D. 298,060

(SLNECB, 2015)

19. Which of the following numbers is not divisible by 11?

A. 506
B. 759
C. 236
D. 473

(SLNECB, 2015)

20. The product of $\sqrt{81}$ and $\sqrt{36}$ is:

A. 45
B. 52
C. 44
D. 54

(SLNECB, 2015)

21. Which of the following numbers is not a square:

A. 36
B. 96
C. 225
D. 121

(SLNECB, 2016)

22. 58_{10} when changed to base five becomes::

A. 3145
B. 2135
C. 1325
D. 2315

(SLNECB, 2016)

23. The next number to the sequence 15, 22, 29, 36, is:

A. 53
B. 39
C. 43
D. 49

(SLNECB, 2016)

24. Find the square root of $\frac{225}{576}$ in order to get:

A. $\frac{25}{26}$
B. $\frac{25}{24}$
C. $\frac{15}{16}$
D. $\frac{15}{24}$

(SLNECB, 2016)

25. Quotient $\sqrt[3]{125} \div \sqrt{25}$ is :

A. 3
B. 5
C. $\frac{5}{3}$
D. 1

(SLNECB, 2017)

26. Which of the below numbers not prime:

A. 21
B. 19
C. 37
D. 41

(SLNECB, 2018)

27. Change $(32)_5$ to base ten :

A. 12
B. 14
C. 16
D. 17

(SLNECB, 2018)

28. $(221)_5 + (312)_5$ is:

A. $(533)_5$
B. $(1033)_5$
C. $(133)_5$
D. $(331)_5$

(SLNECB, 2018)

1.2. Structured questions

1.

a) Write down the prime numbers which are greater than 10 and less than 20.

11, 13, 15, 17, 19

b) Write down 128 as a product of its prime factors.

2 | 128
2 | 64
2 | 32
2 | 16
2 | 8
2 | 4
2 | 2

$128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
$128 = 2^7$

(SLNECB, 2006)

2. a) Convert $(29)_{10}$ to base 5

5 | 29 — 25 — 4
5 | 5 — 5 — 0
1

$= (104)_5$

b) Convert $(143)_5$ to base 10.

$1 \times 5^2 + 4 \times 5^1 + 3 \times 5^0$
$1 \times 25 + 4 \times 5 + 3 \times 1$
$25 + 20 + 3$
$= (48)_{10}$

(SLNECB, 2006)

CHAPTER 2: OPERATIONS ON WHOLE NUMBERS

2.1. Multiple choice questions

1. The solution of (6 × 105 + 3 + 4) is:
   - **A.** 210
   - **B.** 201
   - **C.** 214
   - **D.** 90

(SLNECB, 2008)

2. The value of $\frac{0.23+0.8}{0.4\div0.2}$ is:
   - **A.** 0.515
   - **B.** 0.63
   - **C.** 10.23
   - **D.** 12.875

(SLNECB, 2009)

3. Simplify the expression: $(-4)(3)(-1)(-2)$.
   - **A.** 4
   - **B.** -4
   - **C.** 24
   - **D.** -24

(SLNECB, 2010)

4. Find the value of the expression: $3^3+4\times(8+4)\div2$.
   - **A.** 51
   - **B.** 93
   - **C.** 105
   - **D.** 40

(SLNECB, 2010)

5. Simplifying $(25+4\times6)\div7$, the answer is:
   - **A.** 9
   - **B.** 13
   - **C.** 7
   - **D.** 5

(SLNECB, 2013)

6. What is the value of $\frac{0.48 \text{ X } 0.305}{0.006}$
   - **A.** 12.8
   - **B.** 13.8
   - **C.** 28.4
   - **D.** 24.4

(SLNECB, 2016)

2.2. Structured questions

1. Simplify: (2.5 + 3) – 3.4 × 3 + 5.1.

(SLNECB, 2013)

CHAPTER 3: RATIO AND PROPORTION

3.1. Multiple choice questions

1. Dividing \$150 between Ali iyo Asha in the ratio 2 : 3 respectively equals:
   - **A.** \$60 and \$90
   - **B.** \$70 and \$80
   - **C.** \$100 and \$50
   - **D.** \$90 and \$60

(SLNECB, 2012)

2. Given 5 : 3 = x : 6, the value of x is:
   - **A.** 30
   - **B.** 10
   - **C.** 5
   - **D.** $\frac{18}{5}$

(SLNECB, 2013)

3. If Ali and Osman collected an amount of \$480 in the ratio 3 : 2 respectively. What is Ali's money?
   - **A.** \$288
   - **B.** \$240
   - **C.** \$720
   - **D.** \$320

(SLNECB, 2013)

4. The ratio of the heights of Ali and Nour is $\frac{6}{7}$. If the height of Nour is 175 cm, what is Ali's height?
   - **A.** 175 cm
   - **B.** 185 cm
   - **C.** 90 cm
   - **D.** 150 cm

(SLNECB, 2014)

5. The circumference and diameter of a circle has 3:1 as the ratio of their lengths. Find the circumference of the circle whose diameter in 4.5 cm.
   A. 17.5
   B. 9.5
   C. 13.5
   D. 11.5

(SLNECB, 2016)

6. Divide 672 shillings among Ali, Omer and Awil in the ratio 7:5:9. Then Ali will get::
   A. 288 sh.
   B. 264 sh.
   C. 260 sh
   D. 224 sh

(SLNECB, 2016)

7. 5 men built two rooms in 9 days. How many days will it take the same two rooms to be built by 3 men?
   A. 12 days.
   B. 27 days
   C. 45 days.
   D. 15 days

(SLNECB, 2016)

8. Divide sh 615 between Ahmed, Ali and Omer in the ratio 3:5:7 respectively, Ali will get ::
   A. 123
   B. 205
   C. 287
   D. 124

(SLNECB, 2018)

9. The value of the variable in the ratio $\frac{2}{5}=\frac{6}{n}$ is :
   A. 2
   B. 6
   C. 15
   D. 30

$2n = 5 \times 6$

$\frac{2n}{2} = \frac{30}{2}$

(SLNECB, 2018)

10. The sum of the ratio 4:3:2 is:
    A. 800
    B. 900
    C. 9
    D. 7

7
$+2$

(SLNECB, 2018)

3.2. Structured questions

1. The ratio of the heights of Ali and Asha is 7 : 6. If the height of Ali is 175 cm, what is the height of Asha?

$\frac{7}{6} \times \frac{175}{x}$ $\quad \frac{7x}{7} = \frac{1050}{7}$

$7x = 6 \times 175$ $\quad x = 150cm$

$7x = 1050$

(SLNECB, 2008)

2. The cost of 6 books is sh 24000. What is the cost of 15 books?

$\frac{6}{15} \times \frac{24000}{x}$ $\quad \frac{6x}{6} = \frac{360000}{6}$

$6x = 15 \times 24000$ $\quad x = 60000sh$

$6x = 360000$

(SLNECB, 2008)

3. A milk factory produces 4 kg of butter from 46 litres of milk. How many litres of milk are needed to produce 200 kg of butter?

$\frac{4}{200} \times \frac{46}{x}$ $\quad \frac{4x}{4} = \frac{9200}{4}$

$4x = 200 \times 46$ $\quad x = 2300litres$

$4x = 9200$

(SLNECB, 2008)

4. 14 cows ate a heap of grass in 30 days. How long will the cows finish the grass if 6 of them are sold?

$(14 \times 30) \div 6$

$= 420 \div 6$

$= 70$

(SLNECB, 2008)

5. Farmers have 120 beasts in their garden. If the ratio of the cattle, goats and camels is: 1 : 2 : 3 find the number of:

a) Cattle

$\frac{1}{6} \times 120$

$= 20$

b) Goats

$\frac{2}{6} \times 120$

$= 40$

c) Camels

$\frac{3}{6} \times 120$

$= 60$

(SLNECB, 2009)

6. The ratio of the height of Ali and Asha is 7:6. If the height of Ali is 175 cm, what is the height of Asha?

$\frac{7}{6} \times \frac{175}{x}$

$7x = 6 \times 175$

$\frac{7x}{7} = \frac{1050}{7}$

$x = 150\text{cm}$

(SLNECB, 2015)

7. A milk factory produces 4kg of butter from 46 liters of milk. How many liters of milk are needed to produce 200kg of butter?

$\frac{4}{200} \times \frac{46}{x}$

$4x = 200 \times 46$

$\frac{4x}{4} = \frac{9200}{4}$

$x = 2300\text{litres}$

(SLNECB, 2015)

8. 12 labours can complete a house of two rooms in 6 days. How many days will 3 labour can complete that house?

(SLNECB, 2017)

9. The mean of the weights of 6 boys is 28 Kg. The mean of the weight of 4 of them is 26 Kg. What is the mean of the weight of the other boys?

(SLNECB, 2017)

CHAPTER 4: SCALE OF DRAWING

4.1. Multiple choice questions

1. In scale drawing 2 : 200 stands for:
   - **A.** 1 cm stands for 100 cm
   - **B.** 2 cm stands for 100 cm
   - **C.** 1 cm stands for 200 cm
   - **D.** 2 cm stands for 50 cm

(SLNECB, 2014)

4.2. Structured questions

1. If a plan of a house is drawn to a scale of 1: 20 and its dimensions become 11 cm by 4 cm.
   - **a)** What is the actual length of the house?

     _____
     _____
     _____
   - **b)** How wide is the house on the ground?

     _____
     _____
     _____
   - **c)** What is the ground area of plot of the house?

     _____
     _____
     _____

(SLNECB, 2008)

CHAPTER 5: FRACTIONS, DECIMALS AND PERCENTAGES

5.1. Multiple choice questions

1. $3\frac{1}{3} - 2\frac{1}{6}$ is:

   A. $1\frac{1}{3}$

   B. $1\frac{1}{6}$

   C. $2\frac{1}{3}$

   D. $2\frac{1}{6}$

(SLNECB, 2008)

2. $\frac{4}{5}$ written as a percentage is:

   A. 20%
   B. 125%
   C. 80%
   D. 40%

(SLNECB, 2008)

3. 34% of 150 points is equal to:

   A. 50
   B. 51
   C. 60
   D. 68

(SLNECB, 2009)

4. Four students are reading the same book. The table below shows the portion that each student has read.

Student	Portion read
Yassin	$\frac{7}{10}$
Fadumo	$\frac{2}{3}$
Hassan	$\frac{5}{8}$
Safia	$\frac{3}{4}$

Which student has read the largest portion of the book?

A. Yassin
B. Fadumo
C. Hassan
D. Safia

(SLNECB, 2010)

5. In a certain class, there are 20 girls and 25 boys. What percentage are girls?
   A. 44.4%
   B. 34.4%
   C. 33.4%
   D. 23.4%

(SLNECB, 2011)

6. Change $\frac{1}{16}$ into decimal.
   A. 0.125
   B. 0.625
   C. 0.0625
   D. 0.3125

(SLNECB, 2011)

7. 15% of180 equals:
   A. 36
   B. 27
   C. 9
   D. 3

(SLNECB, 2012)

8. Change $\frac{3}{4}$ into percentage.
   A. 50%
   B. 70%
   C. 75%
   D. 85%

(SLNECB, 2012)

9. The simplification of $3\frac{1}{2}+4\frac{1}{3}$ is:
   A. $7\frac{5}{6}$
   B. $12\frac{1}{3}$
   C. $6\frac{1}{3}$
   D. $7\frac{1}{2}$

$\frac{7}{2} + \frac{13}{3}$

(SLNECB, 2012)

10. The percentage of 0.25 is written as:
    A. 0.25%
    B. 25%
    C. 2.5%
    D. 75%

(SLNECB, 2013)

11. 20% of 400 is:

A. 240
B. 80
C. 8
D. 24

(SLNECB, 2013)

12. There are 15 women and 25 men working in the government hospital. The percentage of the women is:

A. 60%
B. 37.5%
C. 40%
D. 62.5%

(SLNECB, 2013)

13. $(\frac{1}{2}+\frac{1}{3})\times\frac{6}{5}$ is:

A. $\frac{1}{3}$
B. $\frac{5}{6}$
C. 1
D. $\frac{2}{3}$

(SLNECB, 2014)

14. Changing 56% to decimal is:

A. 5.6
B. 56
C. 0.56
D. 0.056

(SLNECB, 2014)

15. 12 ½ % of 80 days is:

A. 15 days
B. 10 days
C. 8 days
D. 20 days

(SLNECB, 2014)

16. 34% of 150 points is equal:

A. 50
B. 51
C. 60
D. 68

(SLNECB, 2015)

17. Change $\frac{1}{16}$ into decimal:

A. 0.125
B. 0.625
C. 0.0625
D. 0.3125

(SLNECB, 2015)

18. $\left(\frac{1}{2}+\frac{1}{3}\right) \times \frac{6}{5}$ is:

A. $\frac{1}{3}$
B. $\frac{5}{6}$
C. 1
D. $\frac{2}{3}$

$\left(\frac{1}{2}+\frac{1}{3}\right)$ $\frac{3+2}{6}=\frac{5}{6}\times\frac{6}{5}$

2 | 2, 3
3 | 1, 3
1, 1

(SLNECB, 2015)

19. $12\frac{1}{2}\%$ of 80 days is:

A. 15 days
B. 10 days
C. 8 days
D. 20 days

(SLNECB, 2015)

20. 20% of 400 is:

A. 240
B. 80
C. 8
D. 24

(SLNECB, 2015)

21. 35% of water dripped from a tank throughout the night. Only 940 liters remained. How many liters of water did the tank drip out?

A. 506
B. 453
C. 307
D. 293

(SLNECB, 2016)

22. Evaluate : $4\frac{3}{8} \div (1\frac{5}{8} - \frac{3}{4})$ in order to obtain:

A. $\frac{1}{5}$

B. $\frac{5}{64}$

C. 5

D. $\frac{7}{5}$

(SLNECB, 2016)

23. 0.875 is equivalent to:

A. $\frac{9}{7}$

B. $\frac{6}{5}$

C. $\frac{7}{8}$

D. $\frac{5}{6}$

(SLNECB, 2016)

24. $1\frac{2}{3}$ + (4X 2) ÷ $\frac{1}{2}$ - 4 is :

A. $\frac{5}{3}$

B. $\frac{41}{3}$

C. $\frac{-41}{3}$

D. $\frac{46}{3}$

(SLNECB, 2017)

25. 12.5% of 80 hours is:

A. 15 hours

B. 10 hours

C. 8 hours

D. 20 hours

(SLNECB, 2017)

26. 0.003 is equivalent to:

A. $\frac{3}{10(}$

B. $\frac{3}{100(}$

C. $\frac{3}{10}$

D. 0.03

(SLNECB, 2018)

27. 40% of 1250 is:

A. 500

B. 400

C. 125

D. 300

(SLNECB, 2018)

5.2. Structured questions

1. In a class of 40 students, 15 failed in the examination. What percentage of the students:

   a) Failed

   b) Passed

(SLNECB, 2006)

2. 20% of the students failed in the examination. The number of the failed students was 2500.

   a) How many students passed?

   b) What was the total number of students?

(SLNECB, 2007)

3. **a)** Simplify: $3\frac{1}{2}+1\frac{1}{3}-2\frac{3}{5}$

$3\frac{1}{2}+1\frac{1}{3}-2\frac{3}{5}$

$\frac{7}{2}+\frac{4}{3}-\frac{13}{5}$

$\frac{21+8}{6}=\frac{29}{6}-\frac{13}{5}$

$\frac{145-78}{30}=\frac{67}{30}$

2 | 6,5
3 | 3,5
5 | 1,5
1,1

$\frac{21}{2}\frac{5}{9}$ $\frac{4}{14}\frac{29}{9}$ $\frac{13}{78}$ $\frac{145}{78}\frac{67}{67}$

b) Convert10.250 to a fraction.

(SLNECB, 2007)

4. Asha received the following marks in a test.

English = $\frac{4}{5}$, *Mathematics* = $\frac{21}{25}$, *Social studies* = $\frac{13}{15}$, *Science* = $\frac{17}{20}$

In which subject did she do best? Show your working.

(SLNECB, 2008)

5. Work out: $21 \div 2\frac{1}{3}$.

(SLNECB, 2010)

6. A tank contains 80,000 litres of water. When some water is used, there is 20,000 litres remaining in the tank.

a) How many litres of water is used?

What is the percentage of the water used from the tank?

b) What is the percentage of the water remaining in the tank?

(SLNECB, 2013)

7. The number of the pupils of school were increased from 1000 to 1200.
Find the Percentage increase?

(SLNECB, 2016)

8. Simplify $\frac{3}{4} - \frac{1}{3} \times \frac{5}{3} \div \frac{2}{3} + \frac{1}{4}$

(SLNECB, 2017)

9. Simplify $\frac{2}{3} - \frac{1}{4} \times \frac{8}{5} + \frac{1}{3}$

(SLNECB, 2018)

CHAPTER 6: SETS

6.1. Multiple choice questions

1. $A = \{10, 11, 12, 13\}$ and $B = \{12, 14, 15\}$ then $A \cap B$ is equal to:
   A. {11, 12}
   B. {12}
   C. {11, 13}
   D. {12, 14, 15}

(SLNECB, 2006)

2. $A = \{x{:}x$ is an even number$\}$ $B = \{x{:}x$ is a prime$\}$, $A \cap B$ is equal to:
   A. {-2, 2}
   B. {2}
   C. {2, 4, 6, …}
   D. { }

(SLNECB, 2007)

3. If $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6, 7\}$ the intersection of A and B is:
   A. {2, 3}
   B. {3, 4}
   C. {4, 5}
   D. {3, 6}

(SLNECB, 2012)

4. If $A = \{1, 3, 5, 7, 8\}$, $B = \{1, 2, 5, 8, 9, 10\}$ the intersection A and B is:
   A. {1, 5, 8}
   B. {1, 2, 8}
   C. {1, 5, 2}
   D. {1, 2, 5}

(SLNECB, 2013)

5. If $\{1, 2, m, 5\} = \{2, 4, 1, 5\}$, the value of m is:
   A. 1
   B. 5
   C. 4
   D. 2

(SLNECB, 2014)

6. If A= { 1, 5, 6, 8, 9}. which of the solution sets are subsets of A.

   A. {1,10}
   B. {2, 5, 6}
   C. {4, 6, 8, 9}
   D. {5,6}

(SLNECB, 2018)

6.2. Structured questions

1. **a)** $A = \{1, 3, 5, 7, 9, 11\}$, $B = \{2, 3, 5, 7, 22, 13\}$ Find:

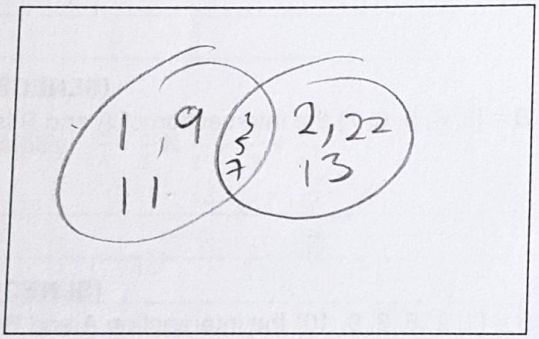
   (i) AUB

   (1,2,3,5,7,9,11,13,22)

   (ii) A∩B

   (3,5,7)

   b) Represent A∩B by a Venn diagram.



(SLNECB, 2007)

2. If $A = \{2, 4, 6, 8, 10\}$, $B = \{1, 3, 5, 7\}$, $C = \{5, 8, 11, 12\}$ Find:

   a) AUB

   U = (1, 2, 3, 4, 5, 6, 7, 8, 10)

   b) B∩C

   ∩ = (5)

   c) AUBUC

   U = (1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12)

(SLNECB, 2011)

3. Given: A = {5, 6, 7, 8, 9}, B = {7, 8, 11, 13} and C = {8, 11, 13, 15}
Find:

a) AU(BUC)

b) (A∩C)UB

(SLNECB, 2014)

4. If A= {2, 4, 6, 8}
B= {1,3, 5, 7}
C= {5,8, 11,12}
Find: A) AUB

U= 1,2,3,4,5,6,7,8)

B) B∩C

∩=(5)

(SLNECB, 2015)

5. a) If the universal set is :

G = {1, 2, 3, 4, 5, 6, 7, 8, 9 }

A = { 2, 3,4, 5, 9}

B = { 3,4,5, 8}

Find :

i) $\overline{A}$ U B

U= (2,3,4,5,8,9)

ii) $\overline{A}$ (A complement)

(1,6,7,9)

t) What is the intersection of teh sets:
A= { 2, 4, 6, 8, 10 }, B = { 12, 14, 16, 18}

∩= (

(SLNECB, 2016)

6. If

G = {1, 2, 3, 4, 5, 6}

A = {1, 2, 3}

B = {1, 2, 4, 5}

C = {1, 2, 3, 6}

Find : A) $A \cap C$

∩=(1,2,3)

B) $A \cup B$

U= (1,2,3,4,5)

C) $B \cap C$

∩=(1,2,)

D) $B \cup C$

U= (1, 2,3,4,5,6)

E) $A \cup C$

U= (1,2,3,6)

(SLNECB, 2018)

CHAPTER 7: INDICES

7.1. Multiple choice questions

1. $n^2 \div n^{-3}$ is equal to:
   A. n^{-6}
   B. n^{-1}
   C. n^5
   D. n^{-5}

(SLNECB, 2006)

2. 3.12×10^2 equals:
   A. 31.2
   B. 3120
   C. 31200
   D. 312

(SLNECB, 2007)

3. If log 2 = 0.3010, log 5 = 0.6990 then log 20 is equal to:
   A. 1.3010
   B. 0.3010
   C. 0.9030
   D. 0.6020

(SLNECB, 2007)

4. The simplification of $\frac{x^2(xy)}{xy^2}$ is:
   A. $\frac{x}{y}$
   B. $\frac{x^2}{y}$
   C. $\frac{x^3y}{xy^2}$
   D. $\frac{2x^2y}{xy^2}$

(SLNECB, 2007)

5. 9.3×10^7 is equal to:
   A. 9300000
   B. 9.300000
   C. 930000000
   D. 93000000.

(SLNECB, 2007)

6. Simplify the expression: $10 \div 10^7$.

A. 10
B. 10^0
C. 10^4
D. 10^{21}

(SLNECB, 2010)

7. What is the value of $3^6 \times 3^{-3}$?

A. 3
B. 9
C. 27
D. $\frac{1}{27}$

(SLNECB, 2011)

8. 0.00053 expressed in scientific notation is:

A. 0.53×10^{-3}
B. 53×10^{-5}
C. 5.3×10^{-4}
D. 5.3×10^4

(SLNECB, 2013)

9. Given: log 2 = 0.3010, log 3 = 0.4771, then log 12 is:

A. 0.7781
B. 1.0791
C. 0.1249
D. 1.0971

(SLNECB, 2013)

10. $(\frac{3}{5})^{-2} \times \frac{3}{10}$ is:

A. $\frac{5}{6}$
B. $\frac{6}{5}$
C. $\frac{5}{8}$
D. $\frac{8}{5}$

(SLNECB, 2014)

11. $8 = 2^3$, when changed into logarithm it is:

A. $\log 3 = 2$
B. $\log_2 8 = 3$
C. $\log 2 = 8$
D. $\log 2 = 3$

(SLNECB, 2014)

12. $n^2 \div n^{-3}$ is equal to:

A. n^{-6}

B. n^{-1}

C. n^5

D. n^{-5}

(SLNECB, 2015)

13. 3.12 X 10^3 is equal to:

A. 31.2

B. 3120

C. 31200

D. 312

(SLNECB, 2015)

14. If log 2 =0.3010, then log 20 is equal to.

A. 1.3010

B. 0.3010

C. 0.9030

D. 0.6020

(SLNECB, 2015)

15. 0.00053 expressed in scientific notation is:

A. 0.53 X 10^{-3}

B. 53 X 10^{-5}

C. 5.3 X 10^{-4}

D. 5.3 X 10^4

(SLNECB, 2015)

16. $\left(\frac{3}{6}\right)^{-2} X \frac{3}{10}$ is:

A. $\frac{5}{6}$

B. $\frac{6}{5}$

C. $\frac{5}{8}$

D. $\frac{8}{5}$

(SLNECB, 2015)

17. $8=2^3$, when changed into logarithm it is:

A. $log_8 3=2$

B. $log_2 8=3$

C. $log_2 2=8$

D. $log_2 2=3$

(SLNECB, 2015)

18. The number 0.0000532 when written in standard notation ::

A. 53.2×10^{-5}.

B. 532×10^{-5}.

C. 5.32×10^{-5}.

D. 532×10^{-5}.

(SLNECB, 2016)

19. Simplify $(2^3)^2 \times (2^8)$:

A. 2^{48}

B. 2^{14}

C. 3^{14}

D. 3^{48}

(SLNECB, 2016)

20. The number 1235×10^{-2} is equal :

A. 123.5

B. 12.35

C. 1.235.

D. 1235

(SLNECB, 2016)

21. Solve $2^{2x} = 16$

A. x= 4 .

B. x= 2

C. x= -2.

D. x= -4

(SLNECB, 2016)

22. $\text{Log}_3\ 9 = 2$ when changed to powers will be:

A. $9 = 2^3$.

B. $9 = 3^2$

C. $3 = 9^2$.

D. $3 = 2^9$

(SLNECB, 2016)

23. Change $8 = 2^3$ to logarithm:

A. $\text{Log}_2\ 8 = 3$.

B. $\text{Log}_8\ 2 = 3$

C. $\text{Log}_3\ 2 = 8$.

D. $\text{Log}_3\ 8 = 2$

(SLNECB, 2016)

24. $2^{x+1} = 32$, the value of X is :

A. 2.

B. 4

C. 6

D, 8

(SLNECB, 2016)

25. $3^4 \div 3^5$ is :

A. 3^1

B. 3^{-1}

C. 3^9

D. 3^0

(SLNECB, 2017)

26. $\left(3\frac{1}{3}\right)^3$ is :

B. 333.23

T. 333.9

J. 37.037

X. 333.6

(SLNECB, 2017)

27. Write this number 0.00001030 in scientific Notation :

A. 1.03×10^{-6}

B. 1.03×10^{-4}

C. 1.03×10^{-5}

D. 10.03×10^{-5}

(SLNECB, 2017)

28. The exponent 10 of 10,000 is

A. 3
B. 4
C. 10
D. 1

(SLNECB, 2017)

29. $9 = 3^2$, when written in logarithmic form is:

A. $\text{Log}_2\ 3 = 9$
B. $\text{Log}_3\ 2 = 9$
C. $\text{Log}_2\ 9 = 3$
D. $\text{Log}_3\ 9 = 2$

(SLNECB, 2017)

30. $\text{Log}_{15}\ 225 = 2$, when written In exponential form is :

A. $225 = 15^2$
B. $225 = 2^{15}$
C. $225 = 15^{-2}$
D. $225 = \sqrt{15}$

(SLNECB, 2017)

31. $5^6 \div 5^4$ is :

A. 5
B. 5^4
C. 25
D. 5^4

(SLNECB, 2018)

32. The number 0.000356, in scientific notation is :

A. 3.56×10^4
B. 3.56×10^{-4}
C. 3.56×10^{-3}
D. 3.56×10^3

(SLNECB, 2018)

33. $(0.2)^3$ is equal to :

A. 0.004
B. 0.002
C. 0.4
D. 0.008

(SLNECB, 2018)

34. In logarithm form, $10.000 = 10^4$ is :

A. $\log_{10}\ 10000 = 4$
B. $\log_4\ 10.000 = 9$
C. $\log_4\ 4 = 1000$
D. $\log_4\ 10 = 100$

(SLNECB, 2018)

7.2. Structured questions

1. Simplify the following:

a) $(7.2 \times 10^{-1}) + (3.5 \times 10^{-2})$

$0.72 + 0.035$
$= 0.755 = 7.55 \times 10^{-1}$

$(2.4 \times 10^{5}) - (1.2 \times 10^{-3})$

$240000 - 0.0012$
$= 239999.9988$
$= 2.399999988 \times 10^{5}$

$(7.63 \times 10^{4}) - (1.36 \times 10)$

$76300 - 13.6$
$= 76286.4$
$= 7.628664 \times 10^{4}$

(SLNECB, 2006)

2. If log 2 = 0.3010, log 3 = 0.4771 and log 5 = 0.6990, calculate without using tables or calculators, the value of:

a) log 8

$\log = (2 \times 2 \times 2)$
$0.3010 + 0.3010 + 0.3010$
$= 0.9030$

2	8
2	4
2	2
	1

b) log 15

$\log = (5 \times 3)$
$0.6990 + 0.4771$
$= 1.1761$

5	15
3	3
	1

c) log $\frac{12}{5}$

12 = (2 x 2 x 3)

5 = (5)

12 = 0.3010 + 0.3010 + 0.4771 = 1.0791

5 = 0.6990 = 1.0791 − 0.6990 = 0.3801

(SLNECB, 2006)

3. If log 2 = 0.3010 , log 3 = 0.477 1 and log 5 = 0.6990, find:

a) log 24

log (2 x 2 x 2 x 3)

0.3010 + 0.3010 + 0.3010 + 0.4771

= 1.3801

b) log $\frac{8}{3}$

8 = 2 x 2 x 2 / 3 = 3

log = (0.3010 + 0.3010 + 0.3010) − 0.4771

= 0.9030 − 4771 = 0.4259

c) log (3 × 40)

3 = 0.4771

(SLNECB, 2007)

4. a) Write in standard form 23570000.

2.357×10^{7}

b) Simplify: $\frac{(3x^2)(x^5)(8x)^2}{(3x^3)(4x^2)}$.

$\frac{(3x^2)(x^5)(8x)^2}{(3x^3)(4x^2)} = \frac{(3x^2)(x^5)\,64x^2}{12x^5}$

$= \frac{192x^9}{12x^5} = 16x^4$

(SLNECB, 2007)

5. Evaluate each of the following logarithms.

a) $\log_2 32$

$32 = 2^5 = \log_2 32 = 5$

b) $\log_3 81$

$81 = 3^4 = \log_3 81 = 4$

(SLNECB, 2009)

6. Write in scientific notation the following numbers.

a) 0.0057

5.7×10^{-3}

b) 36000.0

3.6×10^{4}

(SLNECB, 2010)

7. Given: if log 2 = 0.3010, log 3 = 0.4771 and log 5 = 0.6990, find:

a) log 30

$\log = (2 \times 3 \times 5)$

$0.3010 + 0.4771 + 0.6990$

$= 1.4771$

b) log 45

$\log = (5 \times 3 \times 3)$

$0.6990 + 0.4771 + 0.4771$

$= 1.6532$

(SLNECB, 2011)

8. If log 2 = 0.3010 and log 3 = 0.4771, find:

a) log 18

log = (2x3x3)
0.3010 + 0.4771 + 0.4771
= 1.2552

b) log 8

log = (2x2x2)
0.3010 + 0.3010 + 0.3010
= 0.9030

(SLNECB, 2012)

9. a) If $16 = 2^x$, find the value of x.

$2^x = 2^4$
$x = 4$

2|16
2|8
2|4
2|2
1

b) Simplify: $14x^2y^3 \div 7xy^5$.

$\frac{14x^2y^3}{7xy^5} = 2x^{-2}y^{-2}$

(SLNECB, 2013)

10. Simplify: $28x^4y^6 \div 7x^2y^7$.

$\frac{28x^4y^6}{7x^2y^7} = 4x^2y^{-1}$

(SLNECB, 2014)

11. Simplify the following:

a) $(7.2X10^{-1})+(3.5X10^{-2})$

$0.72 + 0.035$

$= 0.755 = 7.55 \times 10^{-1}$

(SLNECB, 2015)

b) $(2.4X10^{5})-(1.2X10^{3})$

$240000 - 0.0012$

(SLNECB, 2015)

12. a) Write this number in scientific notation. 0.005431

5.431×10^{-3}

b) Write this number 5.43×10^{-5} as a normal number:

(SLNECB, 2016)

13. Change 60320105 in scientific notation:

6.0320105×10^{7}

(SLNECB, 2017)

14. Find the value of y :

a) $3^y = 9^{y-1}$

$3^y = 9^{2(y-1)}$

$3^y = 9^{2y-2}$

$y = 2y - 2$

b) Evaluate these logarithms

i) $\text{Log}_7\ 49$

$49 = 7^2 = \log_7 49 = 2$ //

ii) $\text{Log}_5\ 625$

$625 = 5^4 = \log_5 625 = 4$ //

(SLNECB, 2017)

15. a) what is the value of x in this equation ?

$2^x = 8$

$2x = 8^3$

$x = 3$ //

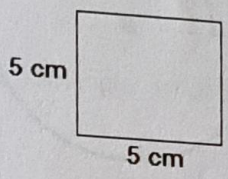
b) Evaluate $\text{Log}_4\ (256)$

(SLNECB, 2018)

CHAPTER 8: LENGTH AND AREA

8.1. Multiple choice questions

1. The area of the square is:



   A. 5 cm²
   B. 10 cm²
   C. 25 cm²
   D. 10 cm

(SLNECB, 2006,2015)

2. The circumference of the circle with radius 14 cm ($\pi=\frac{22}{7}$) is:

   A. 154 cm
   B. 88 cm
   C. 1232 cm
   D. 44 cm

(SLNECB, 2007)

3. The area of trapezium with the parallel sides a = 14 cm b = 34 cm and height h = 14 cm is:

   A. 672 cm²
   B. 306 cm²
   C. 336 cm²
   D. 612 cm²

(SLNECB, 2008)

4. The circumference of a circle whose diameter 28 cm is ____.

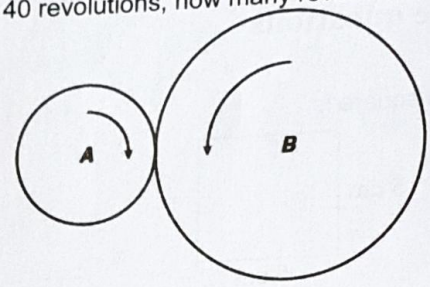
   (Take $\pi=\frac{22}{7}$).

   A. 80 cm
   B. 88 cm
   C. 98 cm
   D. 108 cm

(SLNECB, 2008)

5. When wheel "B" turns 2 revolutions, wheel "A" turns 5 revolutions. When wheel "A" turns 40 revolutions, how many revolutions does wheel "B" turn?

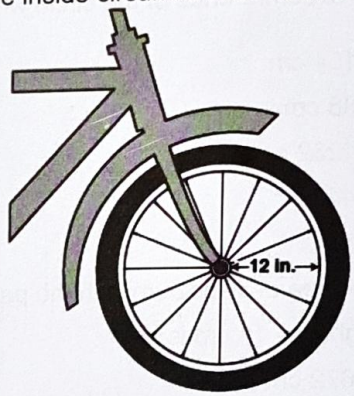
A. 4
B. 16
C. 80
D. 100



(SLNECB, 2009)

6. Mohamed's bicycle wheel has an inside radius of 12 inches. Which expression could be used to find the inside circumference of this wheel?

A. $2 \times 6 \times \pi$
B. $2 \times 12 \times \pi$
C. $9 \times 9 \times \pi$
D. $12 \times 12 \times \pi$



(SLNECB, 2009,2015)

7. If the area of the square is196 mm^2. Calculate the side of the square?

A. 13 mm
B. 14 mm
C. 15 mm
D. 16 mm

(SLNECB, 2011)

8. Find the distance travelled by a tyre with radius 7 feet after 10 revolutions.

A. 44 *f*
B. 110 *f*
C. 220 *f*
D. 440 *f*

(SLNECB, 2011)

9. If the area of circle is 154 m^2, calculate its radius.

A. g = 21 m

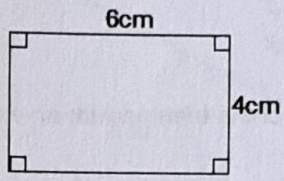
B. g = 7 m

C. g = 14 m

D. g = 3.5 m

(SLNECB, 2012)

10. The area of the rectangle whose dimensions are 6 cm and 4cm respectively is:



A. 12 cm^2

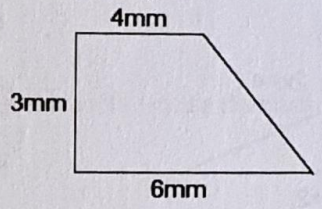
B. 24 cm^2

C. 10 cm^2

D. 48 cm^2

(SLNECB, 2012)

11. The area of the figure shown below equals:



A. 15 mm^2

B. 30 mm^2

C. 45 mm^2

D. 20 mm^2

(SLNECB, 2012)

12. The area of a rectangle with length of 9 m and width of 8 m is

A. 16 m^2

B. 64 m^2

C. 56 m^2

D. 72 m^2

(SLNECB, 2013,2015)

13. The height of a right triangle with area of 60 m^2 and base of 10 m is:

A. 14 m

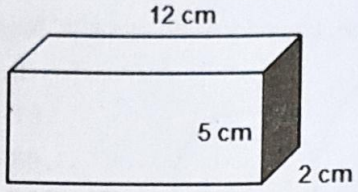
B. 12 m

C. 8 m

D. 6 m

(SLNECB, 2013,2015)

14. The surface area of this closed cuboids' is:



A. 280 cm^2
B. 196 cm^2
C. 188 cm^2
D. 216 cm^2

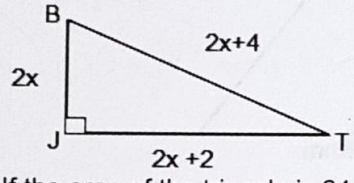
(SLNECB, 2014)

15. The base of the triangle with an area of 36 cm^2, and height 9 cm is:

A. 8 cm
B. 4 cm
C. 16 cm
D. 32 cm

(SLNECB, 2014)

16. Given: ΔBTJ

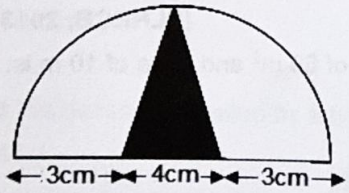


If the area of the triangle is 24 m^2, what is the value of x?

A. -3
B. -4
C. 3
D. 4

(SLNECB, 2014)

17. Given the half-circle. The area, in cm^2, of the part without shade is:



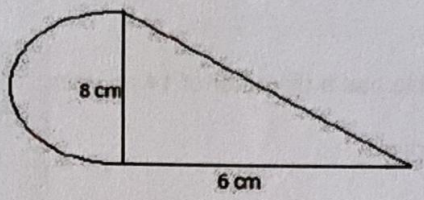
A. 18.3
B. 26.8
C. 25.8
D. 29.3

(SLNECB, 2014)

18. The perimeter of a rectangle is :
   A. 2 L + W
   B. L + 2W
   C. 2 (L + W)
   D. $\frac{1}{2}$ (L + W)

(SLNECB, 2017)

19. In the figure below, the hypotenuse of this triangle is:
   A. 15 cm
   B. 10 cm
   C. 20 cm
   D. $4\sqrt{3}$



(SLNECB, 2017)

20. The breadth of rectangle whose area is 400 cm^2, and its length is 25 cm is:
   A. 16 cm
   B. 14 cm
   C. 18 cm
   D. 12 cm

(SLNECB, 2017)

21. Find the circumference of the circle whose diameter is 14 cm:
   A. 1078 cm
   B. 176 cm
   C. 44 cm
   D. 88 cm

(SLNECB, 2018)

22. The length of the rectangle is more than its breath by 4 cm. If its perimeter is 32 cm, its length is:
   A. 6 cm
   B. 10 cm
   C. 16 cm
   D. 32 cm

(SLNECB, 2018)

8.2. Structured questions

1. A rectangle has width of 7 m and a perimeter of 30 m. Find its length.

(SLNECB, 2006)

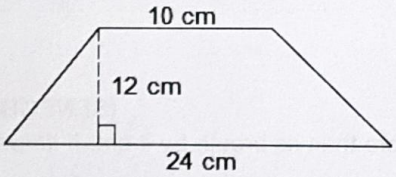
2. If a circle has a diameter of 14 m, using $\pi=\frac{22}{7}$, find its:

   a) Radius

   b) Circumference

(SLNECB, 2006)

3. **a)** Find the area of the given trapezium.

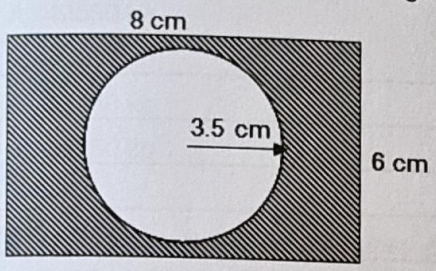


   c) Calculate the area of a parallelogram with length 15 cm and height 10cm?

d) Find the perimeter of a rectangle with length 12 cm and width 50 mm.

(SLNECB, 2007)

4. Calculate the shaded area of the figure below.

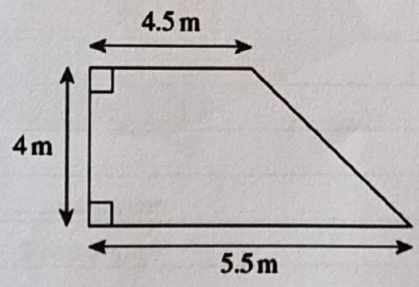


(SLNECB, 2009)

5. The radius of a wheel is 3.5 cm. Calculate the distance travelled by the wheel in 20 revolutions.

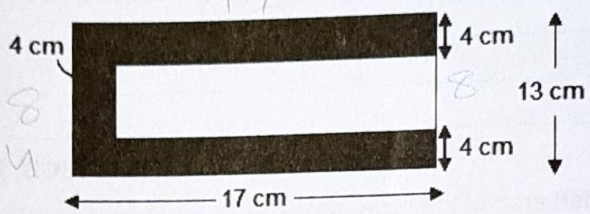
(SLNECB, 2009)

6. The diagram shows a trapezium. Calculate the area of the trapezium.



(SLNECB, 2010,2015)

7. Given:

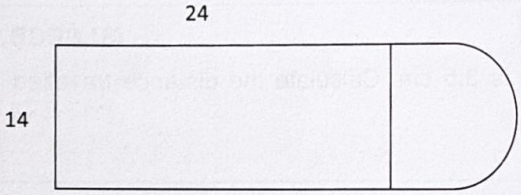


Find the area of the shaded part.

4+4+17
=27

(SLNECB, 2014)

8. Find the perimeter of the below figure .



(SLNECB, 2018)

CHAPTER 9: VOLUME, CAPACITY AND WEIGHT

9.1. Multiple choice questions

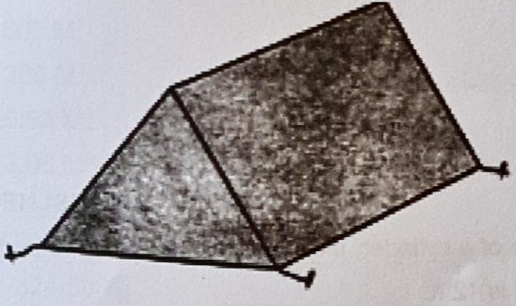
1. If the weight of a sack of sugar is 50 kg, what is the weight of 825 of sugar?
   A. 42550 kg
   B. 41250 kg
   C. 32150 kg
   D. 33250 kg

(SLNECB, 2008)

2. 1168 biscuits were backed into packets of 16 each. The number of packets was:
   A. 73
   B. 83
   C. 74
   D. 93

(SLNECB, 2008)

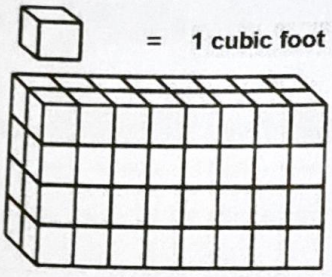
3. Mohamed's tent is a triangular prism, as shown below. Which combination of shapes makes up the bases and faces of Mohamed's tent?



   A. 2 triangles, 2 rectangles
   B. 2 triangles, 3 rectangles
   C. 3 triangles, 2 rectangles
   D. 3 triangles, 3 rectangles

(SLNECB, 2010)

4. What is the volume of the rectangular prism shown?



A. 16 cubic feet
B. 32 cubic feet
C. 56 cubic feet
D. 64 cubic feet

(SLNECB, 2010)

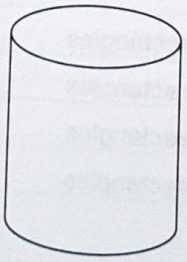
5. Change 4,000,000 cm^3 into m^3
A. 4 m^3
B. 400 m^3
C. 4000 m^3
D. 3000 m^3

(SLNECB, 2011)

6. Change 20,000 grams into kg.
A. 2 kg
B. 20 kg
C. 200 kg
D. 2000 kg

(SLNECB, 2011)

7. Calculate the volume of a cylinder, if its radius is 7 ft and the perpendicular height of the cylinder is 12 ft.
A. 184 ft^3
B. 1084 ft^3
C. 1848 ft^3
D. 2846 ft^3



(SLNECB, 2011)

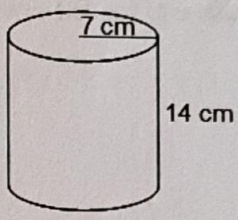
8. When changing 0.956 tons to kilograms, the answer is:
   A. 9.56 kg
   B. 965 kg
   C. 956 kg
   D. 596 kg

(SLNECB, 2013)

9. The volume of a cuboid with length 11 cm width 4 cm, and height 5 cm is:
   A. 220 cm^3
   B. 320 cm^3
   C. 420 cm^3
   D. 240 cm^3

(SLNECB, 2013)

10. Find the volume of cylinder with radius 7 cm and height 14 cm.
   A. 2156 cm^3
   B. 308 cm^3
   C. 15092 cm^3
   D. 616 cm^3



(SLNECB, 2013)

11. The volume of barmil whose radius is 7 miters, height is 2 miters, will be?
   A. 803 M^3
   B. 308 M^3
   C. 8.03 M^3 .
   D. 3.08 M^3

(SLNECB, 2016)

12. 32450 grams is equal to:
   A. 324.50 kg
   B. 3.2450 kg
   C. 32.450
   D. 3245.0 kg

(SLNECB, 2016)

13. 300,000 cm when changed to Km, we get :

A. 3 Km

B. 30 km

C. 300 km

D. 3000 km

(SLNECB, 2017)

14. Which of these measure is the measure of weight :

A. Meter

B. Centimetre

C. Kilometre

D. kilogram

(SLNECB, 2018)

15. Change 15000 m to Km:

A. 150

B. 100

C. 15

D. 10

(SLNECB, 2018)

16. 2.5 L when changed to milliliter is:

A. 2500 ml

B. 25 ml

C. 22.5 ml

D. 225 ml

(SLNECB, 2018)

9.2. Structured questions

1. A closed cylinder has a diameter of 18 cm and a height of 12 cm (take $\pi=3.14$).

   a) What is the surface area of the closed cylinder?

   _____

   _____

   _____

   _____

   b) Calculate its volume.

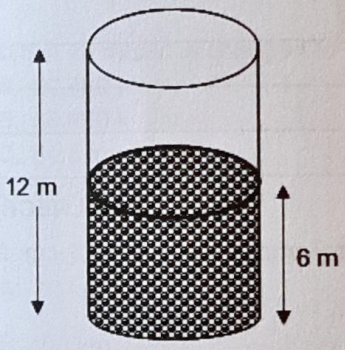
   _____

   _____

   _____

   (SLECB, 2008)

2. A cylinder tank of radius 3.5 m below is half full of water.



   Calculate:

   a) The volume of the cylinder.

   _____

   _____

   _____

   b) The volume of the water.

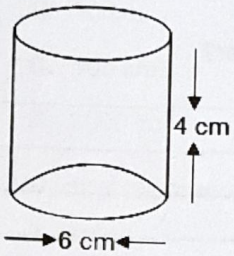
   _____

   _____

   _____

   (SLNECB, 2009)

3. Find the volume of cylinder with diameter 6 cm and height of 4 cm.
Hint: $\pi = \frac{22}{7}$.



(SLNECB, 2012,2015)

4. Find the volume of a cylinder with radius 4 cm and height of 21 sm.

(SLNECB, 2013)

5. If the volume of a cylinder is 1056 cm^3 and its height is 21 cm, find the length of its radius.

(SLNECB, 2014)

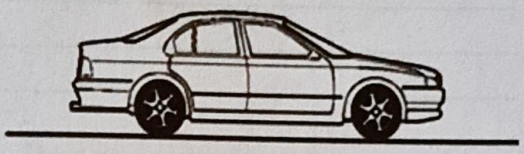
6. A cylinder with volume 616 m^3, has radius 7 m. Calculate the height of the cylinder?

(SLNECB, 2016)

CHAPTER 10: SPEED, TIME AND DISTANCE

10.1. Multiple choice questions

1. Calculate the distance travelled by car if the speed of the car was 80 km/h during 2 hours.
   A. 40 km
   B. 60 km
   C. 80 km
   D. 160 km



(SLNECB, 2011)

2. An athletic-man runs 960 m 120 seconds. His velocity is:
   A. 12 m/s
   B. 8 m/ s
   C. 16 m/s
   D. 10 m/s

(SLNECB, 2013)

3. When 18 m/sec is changed to km/hr, it is:
   A. 96.400 km/hr
   B. 68.400 km/hr
   C. 64.8 km/hr
   D. 84.600 km/hr

(SLNECB, 2014)

4. The speed of a lorry is 80km/hr. What distance does it cover in 5 hours?
   A. 80 km
   B. 400 km
   C. 200 km
   D. 160 km

(SLNECB, 2018)

5. Change 7200 second to hours :
   A, 3,
   B. 1
   C. 2,
   D. 4

(SLNECB, 2018)

10.2. Structured questions

1. A driver drove from Berbera to Hargeisa (174 km) apart in 3 hours.

   a) What was his average speed?

   b) If he drove at an average speed of 30 km/h for the first hour, what was his average speed during the rest of the journey?

   c) How long would he have taken if his average speed was 29 km/h?

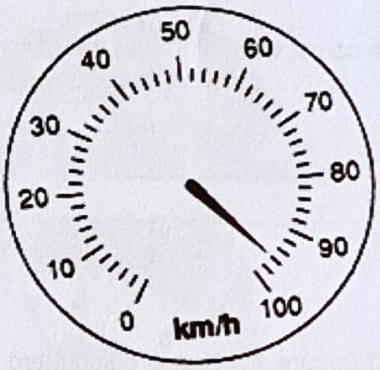
(SLNECB, 2008)

2. Fill in the empty spaces.

	Distance	Time	Speed
A	20 km	2 hrs	
B		90 min	90 km/h
C	45 km		30 km/h

(SLNECB, 2009)

3. The diagram shows the speedometer in a car. The car travels at the speed shown on the speedometer for 15 minutes. How many kilometers has the car travelled in this time?



(SLNECB, 2010)

4. Fill the table below:

Distance (*m*)	Time (sec)	Velocity (*m/s*)
80 m	2 seconds	
	3 seconds	60 m/s
20 m		5 m/s

(SLNECB, 2012)

5. a driver drove from Berbera to Hargeisa 174km apart in 3 hours. What was his average speed?

(SLNECB, 2015)

CHAPTER 11: MONEY

11.1. Multiple choice questions

1. The buying price of a camel was $700 and the selling price was $905. The profit was:
   A. $200
   B. $215
   C. $205
   D. $195

(SLNECB, 2008)

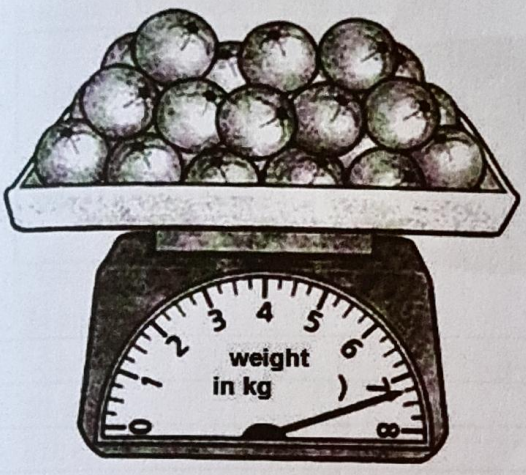
2. The price of dining furniture has been discounted by 15%. If it sold for $2278, the original price was:
   A. $1936
   B. $2428
   C. $2620
   D. $2680

(SLNECB, 2009)

3. A pair of sandals is on sale for 20% off the original price at Hargeisa stores. If the original price is $16, what is the sale price?
   A. $3.20
   B. $12
   C. $12.80
   D. $19.20

(SLNECB, 2010)

4. Muna gives the clerk a twenty-dollar bill to pay for oranges shown in the diagram below. The cost of the oranges is $1.89 per kilogram. How much money will Muna receive in change?

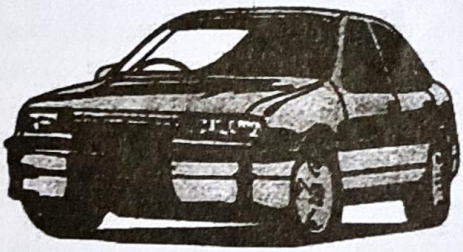


A. Under $5
B. Between $5 and $7
C. Between $7 and $9
D. Over $9

(SLNECB, 2010)

11.2. Structured questions

1. A car is on sale in Burao. What is the price of the car?



Sale

15% off normal price

Normal price = $8400

(SLNECB, 2010)

2. A man bought 15 goats by $20 each and then he sold each by $23.
   Calculate:
   a) The cost price

   b) The selling price.

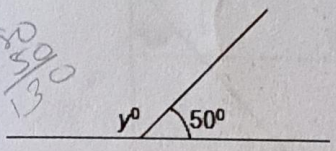
   c) The profit.

(SLNECB, 2012)

CHAPTER 12: GEOMETRY

12.1. Multiple choice questions

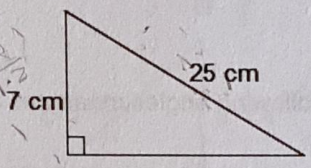
1. In the figure, the value of y^0 is equal to:



A. 230^0
B. 310^0
C. 130^0
D. 220^0

(SLNECB, 2006)

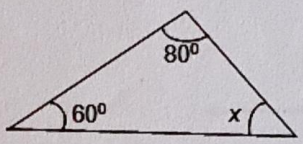
2. The length of the missing side is:



A. 24 cm
B. 18 cm
C. 32 cm
D. 576 cm

(SLNECB, 2006)

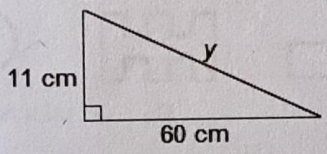
3. The value of x in the triangle is:



A. 70^0
B. 40^0
C. 60^0
D. 50^0

(SLNECB, 2007)

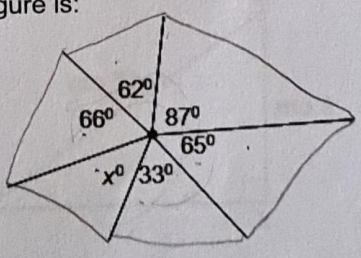
4. The value of y in the right triangle is:



A. 40 cm
B. 61 cm
C. 41 cm
D. 70 cm

(SLNECB, 2007)

5. the value of x in the figure is:

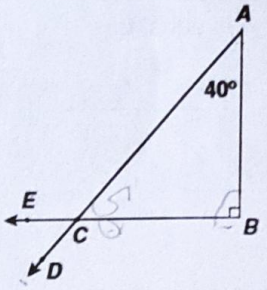


A. 100^0
B. 80^0
C. 60^0
D. 47^0

(SLNECB, 2008)

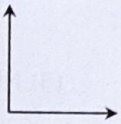
6. In the figure below, triangle ABC is a right angled triangle and angle A = 40^0. What is the value of angled ECD?

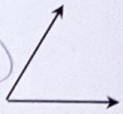
A. 40^0
B. 50^0
C. 130^0
D. 40^0

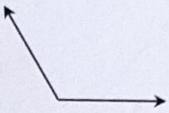


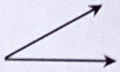
(SLNECB, 2009)

7. Which of the following angles measures about 60^0?

A. 

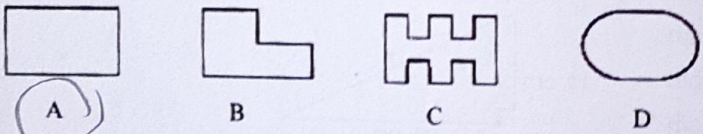
B. 

C. 

D. 

(SLNECB, 2009)

8. Which of the figures below has the greatest area?

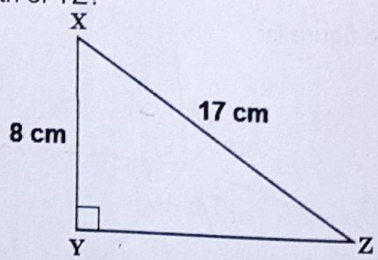


A B C D

(SLNECB, 2009)

9. What is the length of YZ?

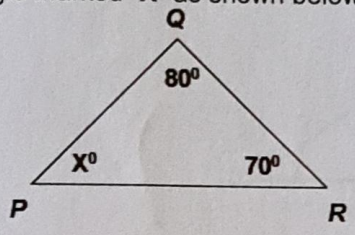
A. 9 cm
B. 15 cm
C. 19 cm
D. 25 cm



(SLNECB, 2009)

10. What is the value of angle marked "**X**" as shown below:

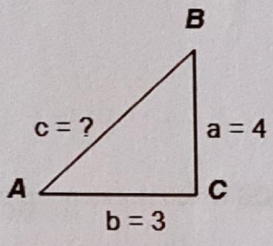
A. 10^0
B. 30^0
C. 50^0
D. 75^0



(SLNECB, 2011)

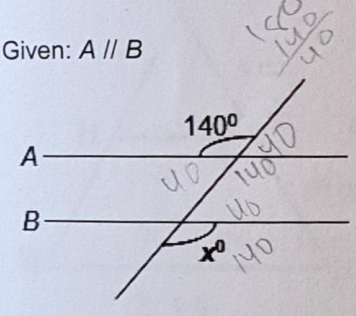
11. A triangle ABC has side lengths of a = 4 *ft*, b = 3 *ft*. find the length of "**c**" as shown below.

A. 5 *ft*
B. 7 *ft*
C. 12 *ft*
D. 10 *ft*



(SLNECB, 2011)

12. Given: *A // B*

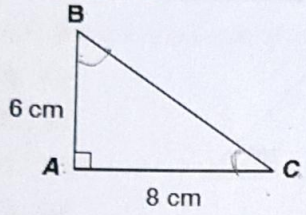


The size of angle ***x*** is:

A. 40^0
B. 140^0
C. 60^0
D. 80^0

(SLNECB, 2013)

13. Given: ΔABC

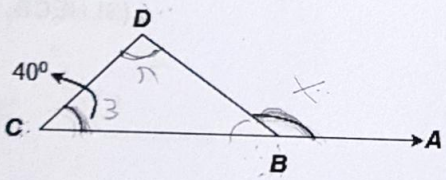


The length of the hypotenuse is:

A. 10 cm
B. 12 cm
C. 9 cm
D. 7 cm

(SLNECB, 2013)

14. Given: triangle CDB which is extended to A.

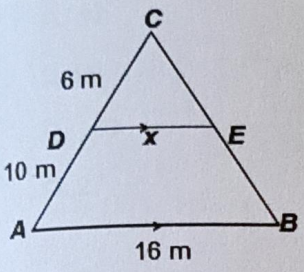


Angle ABD is equal to:

A. 140^0
B. 50^0
C. Angle DBC + angle BCD
D. angle BCD + angle CDB

(SLNECB, 2013)

15. Given: triangle ABC.



The value of ***x*** is:

A. 3 m

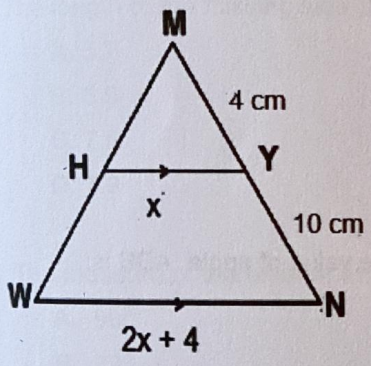
B. 12 m

C. 6 m

D. 15 m

(SLNECB, 2013)

16. Given: the following triangle MNW



The value of *x* is equal to:

A. 6

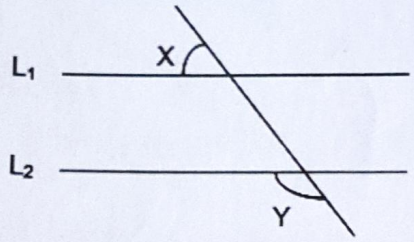
B. $\frac{8}{3}$

C. $\frac{3}{8}$

D. 12

(SLNECB, 2014)

17. Given L_1 and L_2 are parallel lines and angle $X = 40^0$.



If $Y = 3X + 20$, angle Y is equal to:

A. 60^0

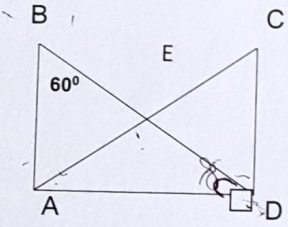
B. 40^0

C. 140^0

D. 180^0

(SLNECB, 2014)

18. In this figure , the angle ADC = 90^0 , AB || D



The angle ABD = 60^0 ,then, the value of angle ADB is:

A. 60^0.

B. 45^0

C. 120^0.

D. 30^0

(SLNECB, 2016)

19. The figure shows:

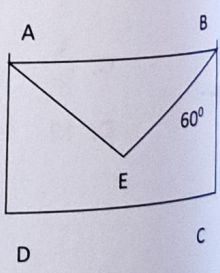
AE = EB, EBC = 60^0, Angle AEB is

A. 45^0.

B. 35^0

C. 38^0.

D. 30^0



(SLNECB, 2016)

20. The sum of the interior angles of triangle is :

A. 30.

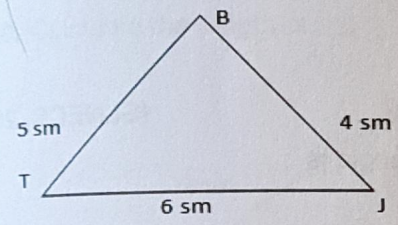
B. 90

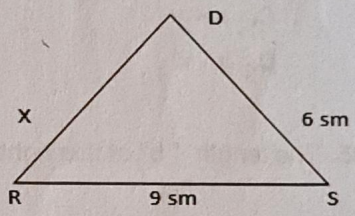
C. 180 .

D. 27

(SLNECB, 2016)

21. Given





The length of the missing side X is :

A. 5.7

B. 5.9

C. 7.5

D. 7.9

(SLNECB, 2017)

22. The measure of the exterior angle of polygon with six sides is :

A. 90^0

B. 72^0

C. 45^0

D. 60^0

(SLNECB, 2017)

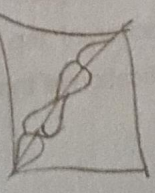
23. The longest side of right-angled triangle is equal to :

B. Hypotenuse

T. Diameter

J. Breadth

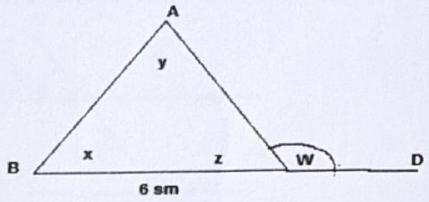
X. Radius



(SLNECB, 2017)

SLNECB

24. Given



Angle W is equal to :

A. x + z

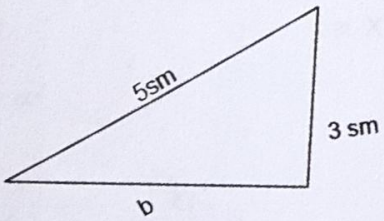
B. z + y

C. x + y

D. z - x

(SLNECB, 2017)

25. The length " b" of this right angled triangle is :



A. 4 cm

B. 4.5 cm

C. 6 cm

D. 15 cm

(SLNECB, 2017)

26. The square of the hypotenuses of right triangle is :

A. Sum of the other two sides

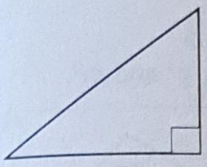
B. Sum of the square of the other two sides

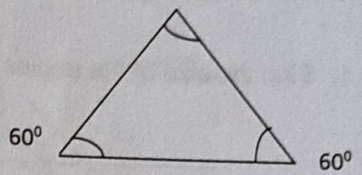
C. Subtraction of the other two sides

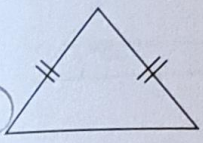
D. Multiplication of the other two sides

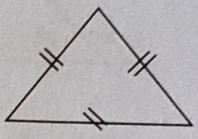
(SLNECB, 2017)

27. Which of these triangle is isosceles?

A 

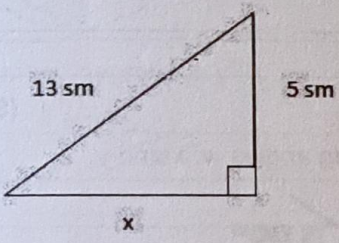
B. 

C.. 

D. 

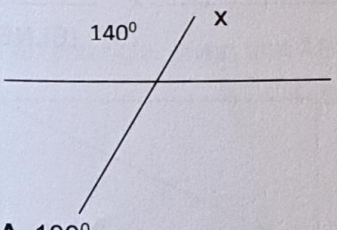
(SLNECB, 2018)

28. Calculate the length x.



A. 7 cm
B. 5 cm
C. 13 cm
D. 12 cm

(SLNECB, 2018)

29. 

The value of angle X is :

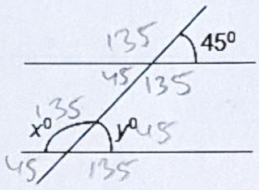
A. 100^0
B. 80^0
C. 60^0
C. 40^0

(SLNECB, 2018)

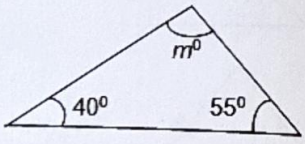
12.2. Structured questions

1. Find the size of the angles marked with letters x^0, y^0 and m^0.

a)



b)

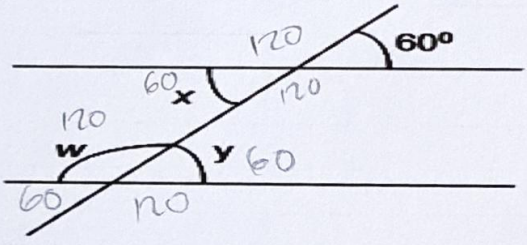


x=135
y=45
m=

40+55+m=180
m=180-95
m=85

(SLNECB, 2006)

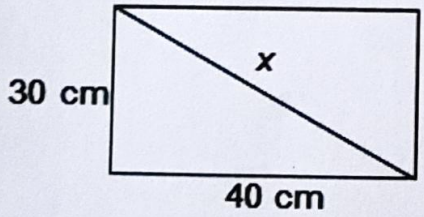
2. Work out the value of the missing angles *w*, *x* and *y*.



$x =$ 60 $w =$ 120 $y =$ 60.

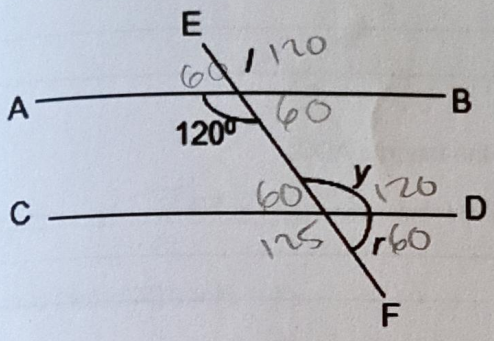
(SLNECB, 2007)

3. Calculate the diagonal side "*x*".



(SLNECB, 2007)

4. Given two parallel lines AB and CD and transversal EF.



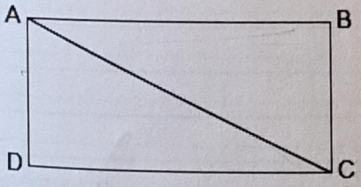
a) What is the size of *l*?

b) How many degrees is *y*?

c) Find the value of *r*.

(SLNECB, 2008)

5. In this rectangle, given that AB = 16 cm and BC = 12 cm.



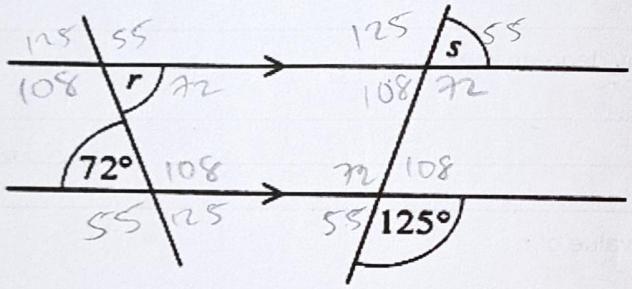
a) Find the length of AC.

b) How many lines (axes) of symmetry does it have? Draw the axes.

c) Calculate the area of the triangle ACD.

(SLNECB, 2008)

6. Work out the size of the angles *r* and *s*.



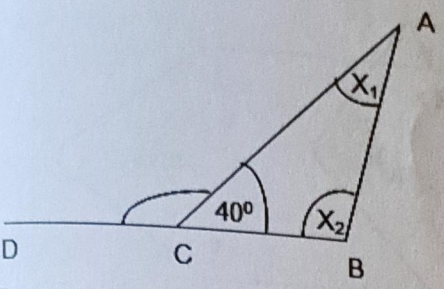
Angle *r* = 72 angle *s* = 55

(SLNECB, 2010)

7. Find the size of the exterior angle of a regular polygon with 6 sides.

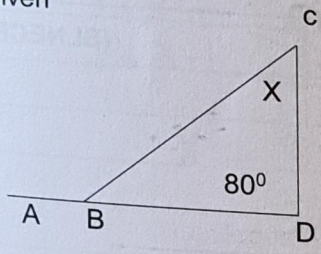
(SLNECB, 2013)

8. Given: ΔABC extended to D.



Prove that <DCA = $X_1 + X_2$.

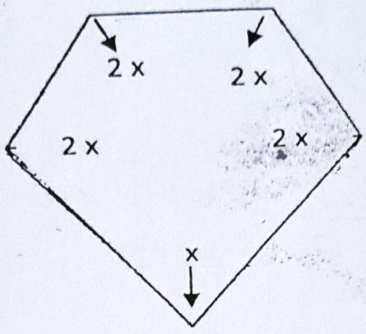
9. Given **(SLNECB, 2014)**



If DC = DB , Find angle ABC ?

(SLNECB, 2016)

10. Find the value of X of the following polygon with 5 sides



$S = (n-2) \times 180$

$S = (5-2) \times 180$

$S = 3 \times 180$

$S = 540$

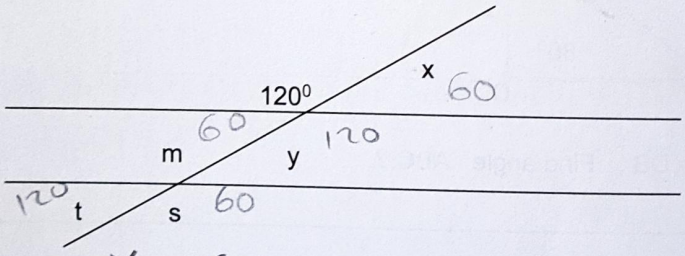
$2x + 2x + x + 2x + 2x = 540$

$\frac{9x}{9} = \frac{540}{9}$

$x = 60$

(SLNECB, 2017)

11. Find the angles x, y, t , s and m



$x = 60$

$y = 120$

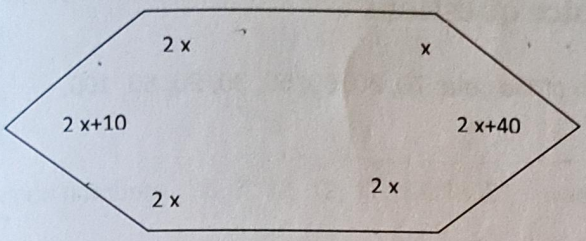
$t = 120$

$s = 60$

$m = 60$

(SLNECB, 2018)

12. Find the value of X in this hexagon ?



$S = (n-2) \times 180$

$S = (6-2) \times 180$

$S = 4 \times 180$

$S = 720$

$2x + 2x + 10 + 2x + 2x + 2x + 40 + x = 720$

$11x + 50 = 720$

$11x = 720 - 50$

$\frac{11x}{11} = \frac{670}{11}$

$x = 78.88$

(SLNECB, 2018)

CHAPTER 13: AVERAGES

13.1. Multiple choice questions

1. Find the mean of the data: 70, 80, 60, 50, 30, 90, 80, 100.
   A. 50
   B. 60
   C. 70
   D. 80

(SLNECB, 2011)

mean
mode
median
range

2. The mode of the numbers 6, 7, 8, 7, 5, 10, 9, 1 and 12 is:
   A. 6
   B. 7
   C. 8
   D. 12

(SLNECB, 2012)

3. The mean mark of examination results of 8 students 80, 60, 50, 40,70, 90, 70 and 100 is:
   A. 50
   B. 60
   C. 70
   D. 80

(SLNECB, 2012)

4. The median of these measurements 1.5 cm, 24 cm, 18 cm, 1.8 cm, 1.4 cm, 1.4 cm and 2 cm is:
   A. 1.7 cm
   B. 2 cm
   C. 1.9 cm
   D. 1.8 cm

(SLNECB, 2013)

5. If the ages of a family is 38, 6, 18, 10, 24, 50 and 14, what is its median?
   A. 24
   B. 22
   C. 18
   D. 22.8

50, 38, 24, 18, 14, 10, 6

(SLNECB, 2014)

6. Ali sat an examination of 7 subjects and received these marks: 54, 65, 89, 71, 82, 50 and 93. What is the average of his marks?
   A. 75
   B. 70
   C. 71
   D. 72

(SLNECB, 2014)

7. The numbers of the passengers of 9 buses were: :
17, 31, 11, 3, 51, 49, 52, 47, 34 52, 51, 49, 47, 34, 31, 17, 11, 3
What will be the median number of these people ?
A. 34.
B. 47.
C. 31
D. 52.

(SLNECB, 2016)

8. The mode numbers 5, 7, 12, 12, 17, 17, 19, 21 was:
A. 17
B. 19.
C. 21
D. 12, 17

(SLNECB, 2016)

9. Which of the below is not an average :
A. Mode
B. Mean
C. Median
D. Sum

(SLNECB, 2017)

10. The mode of these numbers 37,41,37,36,39,39,39,40,40,41,41,39 is:
A. 40 37, 41, 39, 40, 41
B. 39
C. 37
D. 41

(SLNECB, 2017)

11. The age of 6 boys is 7,10,12, 10, 13, and 14 the mean of their ages is:
A. 12
B. 11
C. 10
D. 12

(SLNECB, 2017)

12. The mode of this group: 40, 30, 31, 41, 42, 30, 45, is ;
A. 41
B. 31
C. 30
D. 42

(SLNECB, 2018)

13. The age of 8 boys are 12, 18, 19, 3, 11, 6, 4, 7. Their mean is :
A. 10
B. 11
C. 12
D. 18

(SLNECB, 2018)

13.2. Structured questions

1. A student scored the following marks from 6 subjects:

60, 75, 80, 75, 90, 50.

a) Find the mean

$\frac{60+75+80+75+90+50}{6}$

$= 72$ or 71.6

b) Find the mode

75

(SLNECB, 2010)

2. 12 students scored the following marks:

5, 9, 5, 8, 4, 8, 6, 5, 3, 10, 7, 9

a) Find the median mark.

3, 4, 5, 5, 6, 7, 8, 8, 9, 10

$\frac{6+7}{2} = \frac{13}{2} = 6.5$

b) Find the mean mark.

$\frac{5+9+5+8+4+8+6+5+3+10+7+9}{12}$

$\frac{75}{12} = 6.58$

(SLNECB, 2011)

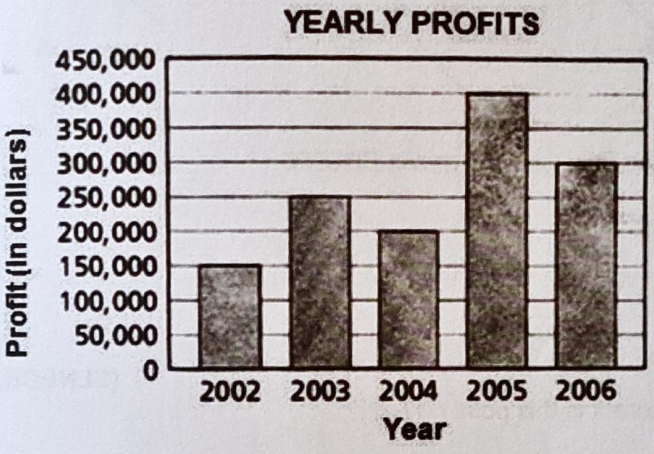
3. The mean of the ages of three girls is 9. Two of them are aged 11 and 7. Find the age of 3rd girl ?

(SLNECB, 2016)

CHAPTER 14: GRAPHS

14.1. Multiple choice questions

1. The graph below shows a Borama restaurant's profit each year for 5 years.



Which year had the greatest increase in profit from the year before?

A. 2003

B. 2004

C. 2005

D. 2006

(SLNECB, 2010)

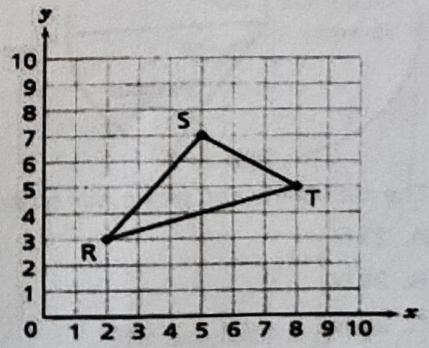
2. A triangle is plotted on the coordinate plane as shown. Which coordinates represent, in order, the locations of point R, point S iyo point T?

A. (3, 2), (7, 5) and (5, 8)

B. (2, 3), (7, 5) and (8, 5)

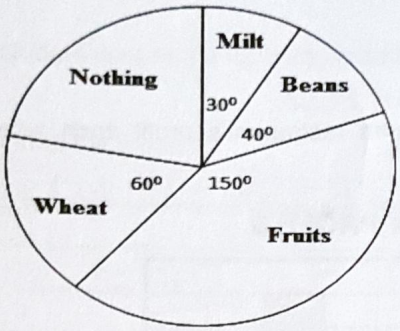
C. (2, 3), (5, 7) and (8, 5)

D. (3, 2), (5, 7) and (5, 8)



(SLNECB, 2010)

3. This circle graph shows Jama's Field of 60 hectares.



The area of the field which is grown FRUITS:

A. 16 hi

B. 30 hi

C. 20 hi

D. 25 hi

(SLNECB, 2013)

4. In which quadrant is this point (-17, 2)?

A. First

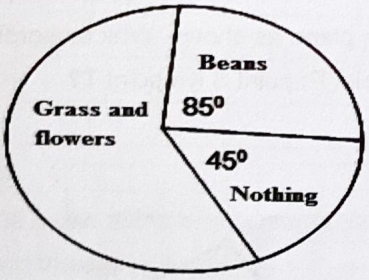
B. Third

C. Fourth

D. Second

(SLNECB, 2014)

5. This circle graph stands for the school garden of 36 hectare.



The area of the part grown with grass and flowers is:

A. 23 hi

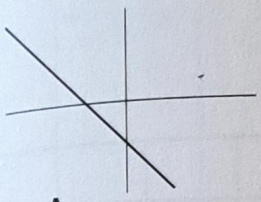
B. 24 hi

C. 25 hi

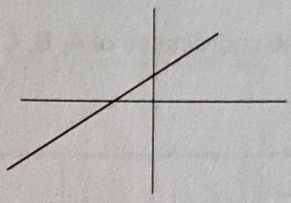
D. 26 hi

(SLNECB, 2014)

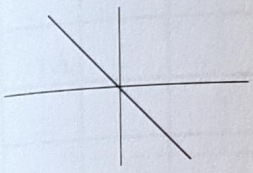
6. Graph of $2y = 3x + 1$ is :



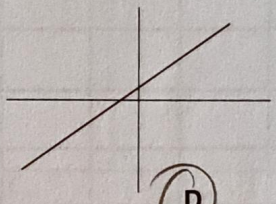
A.



B.



C.



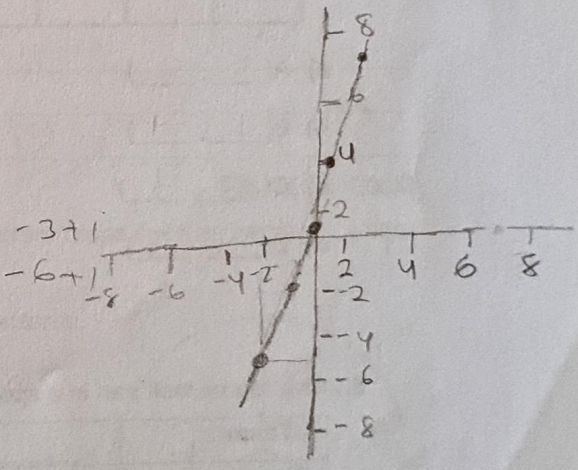
D.

(SLNECB, 2016)

$\frac{2y}{2} = \frac{3x+1}{2}$

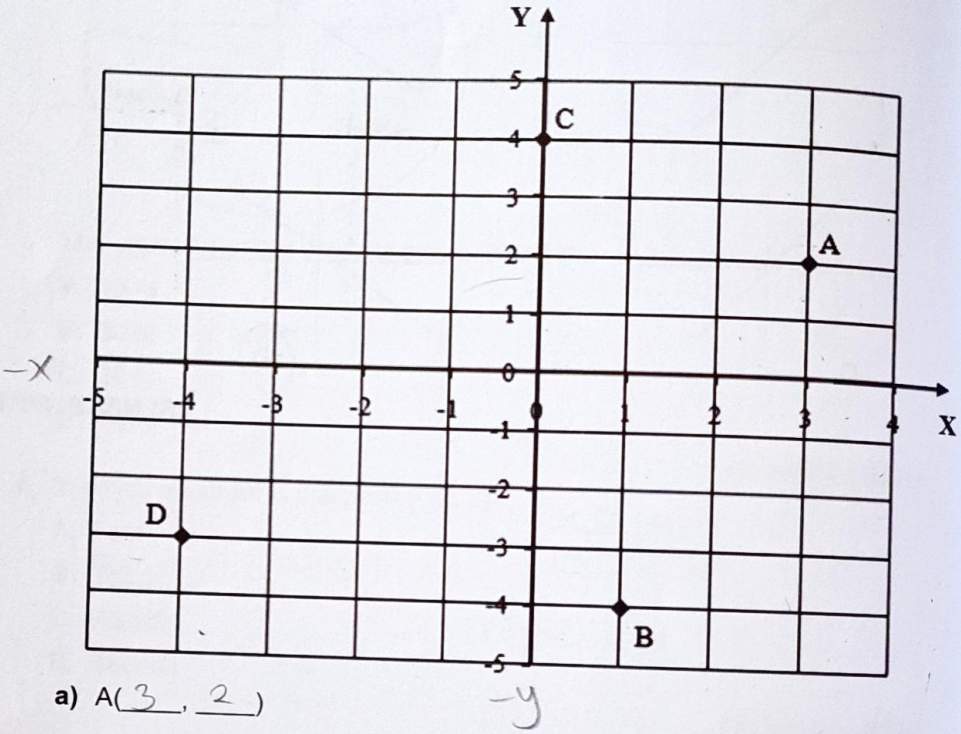
$y = 3x+1$

x	3x+1	y
2	3(2)+1	7
1	3(1)+1	4
0	3(0)+1	1
-1	3(-1)+1	-2
-2	3(-2)+1	-5



14.2. Structured questions

1. Find the coordinates of A, B, C and D.



a) A(3, 2)

b) B(1, -4)

c) C(0, 4)

d) D(-4, -3)

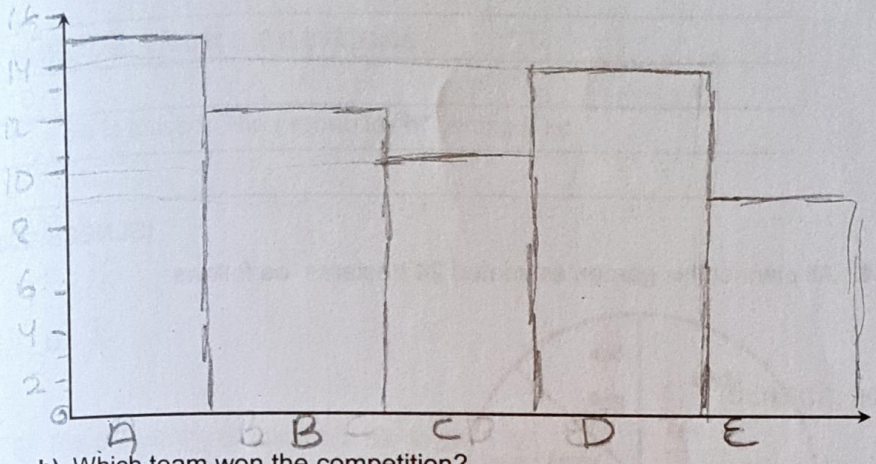
(SLNECB, 2006)

2. Five teams took part in a sports competition. Their scores were as follows.

Team	A	B	C	D	E
Scores	15	12	10	14	9

15
12
10
14
9
60

a) Draw their bar chart to display the data.



b) Which team won the competition?

team A = 15

c) How many points did the winning team win over the second team?

d) What is the mean score?

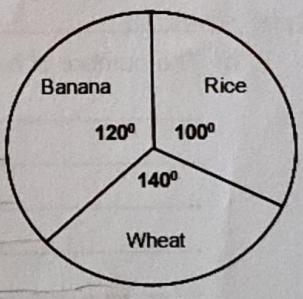
$$\frac{15+12+10+14+9}{5} = \frac{60}{5} = 12$$

(SLNECB, 2008)

3. A farmer uses his land to cultivate different crops such as bananas, wheat and rice as shown below.

If the area of the farm is 24 hectares, calculate:

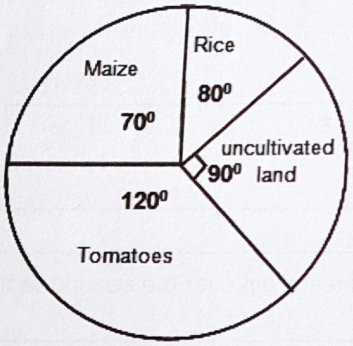
a) The area cultivated for bananas.



b) The area cultivated for rice.

(SLNECB, 2009)

4. Ali planned his garden estimated 24 hectares as follows:



Calculate:

a) The number of hectares of cultivated rice.

b) The number of hectares of uncultivated land.

(SLNECB, 2011)

CHAPTER 15: PROBABILITY

15.1. Multiple choice questions

1. A die is tossed. The probability of getting 6 is:
   A. 1
   B. 6
   C. $\frac{1}{6}$
   D. $\frac{5}{6}$

(SLNECB, 2013)

2. The probability of tossing a die to get 5 is:
   A. $\frac{1}{6}$
   B. $\frac{4}{6}$
   C. $\frac{5}{6}$
   D. 5

(SLNECB, 2014)

3. The event of the probability to get the head when tossed a coin is :
   A. $\frac{1}{4}$
   B. 1
   C. $\frac{1}{2}$
   D. $\frac{1}{3}$

(SLNECB, 2017)

4. When die is tossed, the probability to get 2 is:
   A. $\frac{1}{3}$
   B. $\frac{2}{6}$
   C. $\frac{2}{3}$
   D. $\frac{1}{6}$

(SLNECB, 2017)

15.2. Structured questions

1. A box contains 4 red balls, 5 black balls and 3 yellow balls. One ball is selected at random.

   a) What is the probability of getting a red ball?

   b) What is the probability of a ball that is not red?

   c) What is the probability of obtaining a ball that is either red or black?

(SLNECB, 2008)

CHAPTER 16: ALGEBRA

16.1. Multiple choice questions

1. $2y(3-5)$ is equal to:
   A. -2y
   B. 2y
   C. 14y
   D. -4y

(SLNECB, 2006)

2. If $3x-9=12$, then the value of x is:
   A. 1
   B. 7
   C. 24
   D. 18

(SLNECB, 2006)

3. The solution of the equation $5x+4=3x+10$ is:
   A. 2
   B. 3
   C. 1
   D. 7

(SLNECB, 2007)

4. $3(4x+2y)+2(5x-3y)$ simplifies to:
   A. $20x+y$
   B. $22x$
   C. $22x+12y$
   D. $2x+12y$

(SLNECB, 2008)

5. The solution of the equation $x^2-3x+2=0$ is:
   A. 1 iyo 2
   B. 1 iyo 3
   C. 1 iyo -2
   D. 1 iyo -3

(SLNECB, 2009)

6. If a = 3 and b = 4, what is the value of a^3-b^3?
   A. -27
   B. -37
   C. -47
   D. 27

(SLNECB, 2009)

7. A number is multiplied by 3 and 6 is added to it. The answer is 66. What is the number?
   A. 24
   B. 28
   C. 20
   D. 33

(SLNECB, 2009)

8. When simplified $9a-6b+a-b$ becomes
   A. 9a – 7b
   B. 10a – 6b
   C. 9a – 6b
   D. 10a – 7b

(SLNECB, 2009)

9. Solve the equation for x. $2(6+2x)=8x$
   A. $x = 1$
   B. $x = 2$
   C. $x = 3$
   D. $x = 6$

(SLNECB, 2010)

10. Ahmed is three times as old as Suad. Deeqa is three times older than Ahmed. If Deeqa is 39 years old. How old is Suad?
    A. 12 years
    B. 13 years
    C. 14 years
    D. 16 years

(SLNECB, 2010)

11. Simplify: $3(m+4n)+3(2m+n)$.
    A. $9m + 15n$
    B. $9m + 7n$
    C. $5m + 12n$
    D. $5m + 7n$

(SLNECB, 2010)

12. The difference between two numbers is 5 and the square of their sum is 169, find the two numbers.
    A. 9 and 4
    B. 8 and 3
    C. 7 and 2
    D. 6 and 1

(SLNECB, 2011)

13. If $3(x-1)=6$, find the value of x.
    A. 2
    B. 3
    C. 5
    D. 7

(SLNECB, 2011)

14. If $x = 3$ and $y = 4$ find the value of $x^2 + xy$.

A. 21
B. 25
C. 26
D. 28

(SLNECB, 2011)

15. Find the value of x if $3(x-1)=18$.

A. 5
B. -5
C. 7
D. -7

(SLNECB, 2012)

16. Solve for x: $\frac{x}{4}=\frac{5}{2}$

A. 10
B. 5
C. 8
D. 4

(SLNECB, 2012)

17. If a = 3 and b = 4 what is the value of $(a+b)^2$?

A. 48
B. 27
C. 49
D. 144

(SLNECB, 2012)

18. What is the value of x and y if: $3x + 2y = 7$
$x + y = 3$

A. (1, 2)
B. (2, 3)
C. (1, 3)
D. (2, 1)

(SLNECB, 2012)

19. The ordered pair that makes this simultaneous equation:
$2x + y = -3$
$x + 2y = -3$

A. (-1, 1)
B. (1, -1)
C. (1, 1)
D. (-1, -1)

(SLNECB, 2013)

20. This equation $3x^2+2x-4=0$, when x = -2, the value of this equation is:

A. +4
B. -4
C. +12
D. -12

(SLNECB, 2013)

21. Factorizing $16x^2-4$ is:

A. $(4x-2)(4x-2)$
B. $(4x-2)(4x+2)$
C. $(-4x+2)(4x-2)$
D. $(-4x-2)(-4x+2)$

(SLNECB, 2013)

22. In this equation , $4(2x-2)=24$, the value of x is:

A. -4
B. 2
C. -2
D. 4

(SLNECB, 2013)

23. Factoring $32x^2-8$ we get:

A. $8(2x-1)(2x-1)$
B. $8(2x-1)(2x+1)$
C. $8(-2x+1)(2x+1)$
D. $8(-2x-1)(2x+1)$

(SLNECB, 2014)

24. Expanding this expression $(n-2)(n-9)$ is:

A. $n^2-11n+18$
B. $n^2+11n+18$
C. $n^2-11n-18$
D. $n^2+11n-18$

(SLNECB, 2014)

25. The value of this equation $-3x^2-5x-4=0$ when x = -1 is:

A. -2
B. 2
C. -3
D. 3

(SLNECB, 2014)

26. The value of x and y of these simultaneous equations are:

$2x-3y=4$
$x+2y=9$

A. (2, 5)
B. (5, 2)
C. (-2, 5)
D. (-5, 2)

(SLNECB, 2014)

27. Simplifying $(7x^2-2xy)-(5x^2+3xy)$ we obtain:

A. $-2x^2-5xy$
B. $2x^2-5xy$
C. $-2x^2+5xy$
D. $2x^2+5xy$

(SLNECB, 2014)

28. In a class the number of girls is twice the number of the boys. If 60 students are in the class, what is the number of the boys?

A. 60
B. 30
C. 20
D. 15

(SLNECB, 2014)

29. In the equation , $\frac{1}{s}=\frac{1}{r}+\frac{1}{t}$, find **s** if r=12 , t= 18:

A. 7.2
B. 5.6
C. 6.4
D. 8.8

(SLNECB, 2016)

30. Solve $2(2x-5)=3(x-4)$

A. 2.
B. 3
C. -2
D. -3

(SLNECB, 2016)

31. A rectangle has its length twice its breadth. if the perimeter is 18 cm, what will the length be ?

A. 12 cm.
B. 6 cm.
C. 8 cm.
D. 10 cm.

(SLNECB, 2016)

32. Factorize $12x^2+14x+4$:

A. $(6x+4)(2x+1)$
B. $(6x-4)(2x+1)$
C. $(6x-4)(2x-1)$
D. $(6x+4)(2x-1)$

(SLNECB, 2017)

33. Solving $y^2 - 9 = 0$, the value of y is:

A. y= ± 3
B. y= ± 1
C. y= ± 9
D. y= 0

(SLNECB, 2017)

34. Find the slope of this line equation y= $\frac{6}{5}X - 4$:

A. $\frac{2}{5}$
B. $\frac{6}{5}$
C. 6
D. - 4

(SLNECB, 2017)

35. The slope of the line passing these points B(-2,6) and T(-7,5) is:

A. $\frac{2}{5}$
B. $\frac{-2}{5}$
C. $\frac{-1}{5}$
D. $\frac{1}{5}$

(SLNECB, 2017)

36. Find the equation with slope M= $\frac{2}{3}$: , that passes the point (3, 4):

A. $y = \frac{3}{2}X + 2$
B. $y = \frac{2}{3}X + 2$
C. $y = \frac{2}{3}X - 2$
D. $y = \frac{3}{2}X - 2$

$y-y_1 = M(x-x_1)$
$y-4 = \frac{2}{3}(x-3)$
$y-4 = \frac{2}{3}x-6$
$y = \frac{2}{3}x-6+4$
$y = \frac{2}{3}X-2$

(SLNECB, 2017)

37. The value of m in this equation, $m^2 - 16 = 0$ is :

A. 4
B. -4
C. ± 4
D. 16

(SLNECB, 2018)

38. The value of y in the equation 3 y + 5 = y -7 is :

B. 12
T. -6
J. 6
X. -12

(SLNECB, 2018)

39. The Factors of $x^2 + 5x + 4 = 0$ are :

A. $(x + 1)(x + 4)$
B. $(x - 1)(x - 2)$
C. $(x + 1)(x + 3)$
D. $(x - 1)(x - 3)$

(SLNECB, 2018)

40. The slope of the line passing through the two points (5, 6) and (3,4) is:

A. 1
B. 2
C. 3
D. 4

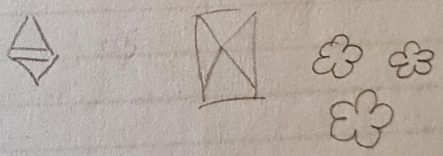
$M = \frac{y_2 - y_1}{x_2 - x_1}$

$M = \frac{4 - 6}{3 - 5}$

$M = \frac{-2}{-2}$

$M = 1$

(SLNECB, 2018)



16.2. Structured questions

1. Simplify:

a) $\frac{16x^2+8x}{4x}$

$\frac{16x^2}{4} = \frac{4x}{2}$

$8x = 2$ $= 4x+2$

b) $(2y-3)(y+2)$

$(2y-y)(3+2)$

$y=3$

(SLNECB, 2006)

2. Solve the simultaneous equations: $x + y = 2$

$3x + 2y + 5 = 10$

(SLNECB, 2006)

3. Find the equation of the line which passes through the points (-2, 3) and (-4, -1).

$M = \frac{y2-y1}{x2-x1}$

$M = \frac{-1-3}{-4-(-2)}$ $M = 2$

$M = \frac{-4}{-2}$

(SLNECB, 2006)

4. Solve: $2y^2 - 5y = 3$.

(SLNECB, 2006)

5. Simplify the algebraic expressions:

a) $3x + 2 - 7x - 4 + 5x + 6$.

$(3x - 7x + 5x) + (2 - 4 + 6)$

$(-4x + 5x) + (-2 + 6)$

$(-x\ \ ) + (-4)$

$x = 4$

b) $(14x + 5y) - (7x - 6y)$

$(14x + 7x) - (5y - 6y)$

$(21x) - (-y)$

$21x + y$

c) $-9x(x - 3)$

$-9x^2 - 27x$

$9x^2 + 27x$

(SLNECB, 2007)

6. Solve the quadratic equation: $x^2 - 5x - 24 = 0$.

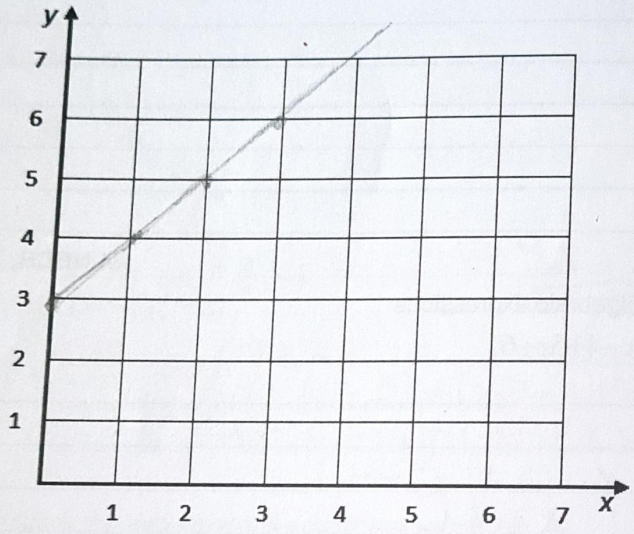
$x^2 - 5x - 24 = 0$

$(x^2 - 8x) -$

(SLNECB, 2007)

7. Draw the line $y=x+3$ on this plane.

x	x+3	y
3	3+3	6
2	2+3	5
1	1+3	4
0	0+3	3
-1	-1+3	-2
-2	-2+3	-1
-3	-3+3	0



(SLNECB, 2007)

8. Solve the simultaneous equations.

$3x + 5y = 8$

$6x - 2y = 4$

$2|3x+5y=8$
$-5|6x-2y=4$
$6x+10y=16$
$-30x+10y=-20$
$-36x=-36$
$-36 \quad -36$
$x=1$

(SLNECB, 2007)

9. Solve these equations:

a) $\frac{4x}{3}=12$

$\frac{4x}{3}=\frac{12}{1}$
$4x=12\times3$
$\frac{4x}{4}=\frac{36}{4}$
$x=9$

b) $\frac{x-2}{3}=\frac{x+3}{4}$

$4x-8=3x+9$

$4x-3x=8+9$

$x=17$

(SLNECB, 2008)

10. Calculate the slope of the line that passes through A (1, 2) and B (-1, -4).

$M=\frac{y_2-y_1}{x_2-x_1}$ $\quad M=\frac{-6}{-2}$

$M=\frac{-4-2}{-1-1}$ $\quad M=3$

(SLNECB, 2009)

11. Ismail is 12 years older than his sister Zainab. In 6 years time, Ismail will be twice as old as Zainab. Find their present ages?

(SLNECB, 2009)

12. Simplify: $8c+5d-c-3d$.

$8c-c+5d-3d$

$7c+2d$

(SLNECB, 2010)

13. Solve the equation: $4(2x-7)=12$.

$8x-28=12$

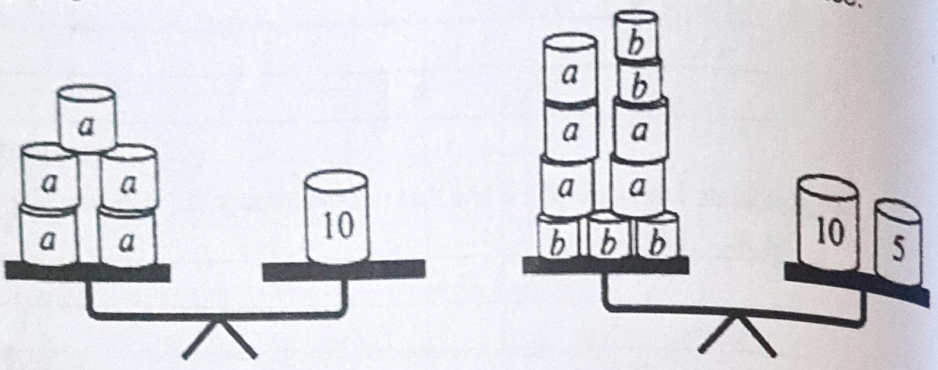
$8x=12+28$

$\frac{8x}{8}=\frac{40}{8}$

$x=5$

(SLNECB, 2010)

14. Ayan has some unknown weights labeled **a** and **b** and some 5 kg and 10 kg weights. She finds that the following combinations of weights balance.



Find the value of **a** and **b**.

(SLNECB, 2010)

15. Solve this quadratic equation by quadratic formula: $6x^2 - 7x + 2 = 0$.

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(-7) \pm \sqrt{-7^2 - 4(6)(2)}}{2(6)}$

$x = \frac{7 \pm \sqrt{-49 - 48}}{12}$

$x = \frac{7 \pm \sqrt{-97}}{12}$

$x = \frac{7 \pm (-97)}{12}$

$x = \frac{7 + (-97)}{12}$ or $x = \frac{7 - (-97)}{12}$

$x = \frac{90}{12}$ or $x = \frac{104}{12} = 0$

$x = 7.6$ or $x =$

(SLNECB, 2010)

16. Given: $3x + 2y = 7$

$x + 3y = 7$

Find the value of x and y by any method.

$3x = 7 - 2y$

$x = \frac{7 - 2y}{3}$

$x + 3y = 7$

$x = 7 - 3y$

$\frac{7 - 2y}{3} = 7 - 3y$

$7 - 2y = 21 - 9y$

$7 - 2y = 21 - 9y$

$-14 = -7y$

$\frac{-14}{-7} = \frac{-7y}{-7}$

$y = 2$

To find x

$x = 7 - 3y$

$x = 7 - 3(2)$

$x = 7 - 6$

$x = 1$

(SLNECB, 2011)

17. Find the value of x if $x^2-7x+6=0$.
(Solve by any method).

$(x+6)(x-7)=0$
$x+6=0$ or $x-7=0$
$x=-6$ or $x=7=0$

(SLNECB, 2012)

18. a) Factorize: $6x^2+7x+1$.

$6x^2+7x+1\times6$
$6x^2+7x+6$
$(6x^2+6x)+(1x+1)$
$6x(x+1)+1(x+1)$
$(6x+1)+(x+1)$

b) Solve this equation: $2x^2+2x-12=0$.

$2x^2+12x-12x2=0$
$2x^2+12x-24=0$

(SLNECB, 2013)

19. The sum of two numbers is 24 and their difference is 10. Find the numbers.

$x+y=24$
$x-y=10$
$2x=34$
$x=17$

To find y
$x+y=24$
$17+y=24$
$y=24+17$
$y=7$

(SLNECB, 2013)

20. Solve this equation: $x^2+x-6=0$.

(SLNECB, 2014)

21. Factorize: $4x^2y+12xy^2$.

(SLNECB, 2014)

22. Two numbers when multiplied give 72, and when added they give 17. Find the two numbers.

(SLNECB, 2014)

23. a) Calculate Y of the line through (3, 1) and (4, y) the slope of the line is m= 7

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\frac{7}{1} = \frac{y-1}{1}$ $8 = y$

$7 = y - 1$

$7 = \frac{y-1}{4-3}$ $7 + 1 = y$

(SLNECB, 2016)

b) Completely factorize : $36\,x^5 - 9x^3$

(SLNECB, 2016)

24. Solve the equation $X^2 + 2X - 15 = 0$

(SLNECB, 2016)

25. A man is 35 years older than his son. . if the sum of their ages is 55. what is

a) The age of the son ?

(SLNECB, 2016)

b) The age of father ?

(SLNECB, 2016)

26. Find the equation line passing these points (3, 2) and (-2, 4)

(SLNECB, 2017)

27. In this equation

$$2x - 3y = -5$$
$$3x + 2y = 12$$

Find the values of X and Y using the graph

(SLNECB, 2017)

CHAPTER 17 : TRIGONOMETRY

17.1. Multiple choice questions

1. The formula for finding Cosine is:::

   A. $\frac{\text{Opposite}}{\text{Adjacent}}$

   B. $\frac{\text{Adjacent}}{\text{Opposite}}$

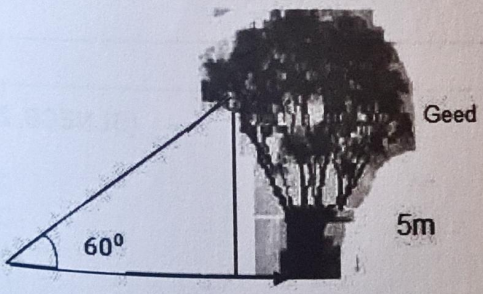
   C. $\frac{\text{Adjacent}}{\text{Hypotenuse}}$

   D. $\frac{\text{Opposite}}{\text{Hypotenuse}}$

(SLNECB, 2018)

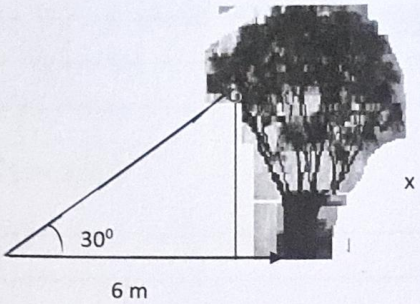
17.2. Structured questions

1. The height of a tree is 5 m. The sun rays make an angle of 60^0. with the ground. What is the length of the shade the tree ?



(SLNECB, 2017)

2. The ground distance between a man and a tree is 6m. If the angle of elevation of his eye is 30^0, what is the height of the tree?



(SLNECB, 2018)

CHAPTER 18: ANSWERS

1.1 Multiple Choice (Answers)

1. D
2. B
3. C
4. C
5. C
6. B
7. D
8. C
9. A
10. C
11. C
12. D
13. B
14. B
15. B
16. D
17. C
18. C.
19. C.
20. A
21. B.
22. B
23. C.
24. D.
25. D
26. A.
27. D.
28. .A.

1.2 Answers (Solutions)

1. a) Prime numbers greater than 10 and smaller than 20 are: {11, 13, 17, 19}.

b)

2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

$= 2^7$

2. a)

$$5\overline{)29}\ 5 \quad 25 \quad 4 \qquad 5\overline{)5}\ 1 \quad 5 \quad 0$$

$(29)_{10} = (104)_5$

b) $(143)_5 = 1 \times 5^2 + 4 \times 5^1 + 3 \times 5^0$

$= 1 \times 25 + 4 \times 5 + 3 \times 1$

$= 25 + 20 + 3$

$= (48)_{10}$

3. a)

$$2\overline{)76}\ 38 \quad 6 \quad 16 \quad 16 \quad 0 \qquad 2\overline{)38}\ 19 \quad 2 \quad 18 \quad 18 \quad 0 \qquad 2\overline{)19}\ 9 \quad 18 \quad 1$$

$$2\overline{)9}\ 4 \quad 8 \quad 1 \qquad 2\overline{)4}\ 2 \quad 4 \quad 0 \qquad 2\overline{)2}\ 1 \quad 2 \quad 0$$

$(76)_{10} = (1001100)_2$

b) $(134)_5 = 1 \times 5^2 + 3 \times 5^1 + 4 \times 5^0$

$= 25 + 15 + 4 = (44)_{10}$

c) $(11111)_2$

$= 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2 + 1 \times 2^0 = 16 + 8 + 4 + 2 + 1 = (31)_{10}$

$$5\overline{)31}\quad 6,\ 30,\ 1 \qquad 5\overline{)6}\quad 1,\ 5,\ 1$$

$(31)_{10} = (111)_5$

4. Factorization of 2310:

2	2310
3	1155
5	385
7	77
11	11
	1

$2310 = 2 \times 3 \times 5 \times 7 \times 11$

6. Complete the table

Base 10	46	39	98
Base 5	141	124	343

2.1 Multiple Choice (Answers)

1. C
2. A
3. D
4. A
5. C
6. D

2.2 Answers (Solutions)

1. $(2.5 + 3) - 3.4 \times 3 \div 5.1$
   $= 5.5 - 3.4 \times 3 \div 5.1$
   $= 5.5 - 3.4 \times 0.588$
   $= 5.5 - 2$
   $= 3.5$

3.1 Multiple Choice (Answers)

1. A
2. B
3. A
4. D
5. C.
6. D
7. D
8. B
9. C
10. C

3.2 Answers (Solutions)

1. Ratio = 7 : 6

$\frac{7}{6} = \frac{175\ cm}{x}$

$7x = 6 \times 175\ cm$

$7x = 1050\ cm$

$x = 150\ cm$

2.

$\frac{6}{15} = \frac{240000}{x}$

$6x = 15 \times 24000$

$6x = 360{,}000$

$x = 60{,}000$

3. $\frac{4\ kg}{200\ kg} = \frac{46\ litir}{x}$

$4x = 200 \times 46\ litir$

$4x = 9200\ litre$

$x = 2300\ litre$

4. $(14 \times 30) = 420 \div 6 = 70\ Days$
5. $Ratio = 1 : 2 : 3 = 1 + 2 + 3 = 6$
   a) Cattle = $\frac{1}{6} \times 120 = \frac{120}{6} = 20$
   b) Goats = $\frac{2}{6} \times 120 = \frac{240}{6} = 40$
   c) Camels = $\frac{3}{6} \times 120 = \frac{360}{6} = 60$
6. Ratio = 7 : 6

$\frac{7}{6} = \frac{175\ cm}{x}$

$7x = 6 \times 175\ cm$

$7x = 1050\ cm$

$x = 150\ cm$

7. $\frac{4\ kg}{200\ kg} = \frac{46\ litir}{x}$

$4x = 200 \times 46\ litir$

$4x = 9200\ litre$

$x = 2300\ litre$

8.

12 labour X 6 days

(3 labour)(X)

$3x = 12 \times 6$

$3x = 72\ cm$

$x = 24\ cm$

9.

(6 X 28 Kg) = 168 Kg

(4 X 26) Kg = 104 Kg

The weight of the boys = 168 Kg - 104 Kg = 64 Kg

4.1 Multiple Choice (Answers)

1. B

4.2 Answers (Solutions)

1.

a) Actual length = 11 m × 2 = 22 m
b) Actual breadth = 4 m × 2 = 8 m
c) Actual Area = 22 m × 8 m = 176 m^2

5.1 Multiple Choice (Answers)

1. B
2. C
3. B
4. D
5. A
6. C
7. B
8. C
9. A
10. B
11. B

12. Bh
13. C
14. C
15. B
16. B
17. C
18. C
19. B
20. B
21. A
22. C
23. C
24. B
25. B
26. B
27. A

5.2 Answers (Solutions)

1)

a) 15 of 40 = $\frac{15}{40} \times 100\% = \frac{1500}{40}\% = 37.5\%$

b) 40 – 15 = 25 ka 40 = $\frac{25}{40} \times 100\% = \frac{2500}{40}\% = 62.5\%$

2)

a) (100% – 20%) = 80%

$\frac{80\% \times 2500}{20\%} = 10{,}000\ Sstudents$

b) Total students = 10,000 + 2500

= 12,500 Students

3)

a) $(3 + 1 - 2) + (\frac{1}{2} + \frac{1}{3} - \frac{3}{5})$

$= (4 - 2) + (\frac{15+10-18}{30}) = 2 + \frac{7}{30}$

$= 2\frac{7}{30}$

b) $\frac{1025}{1000} = \frac{205}{20} = \frac{41}{4}$

4) $\frac{4}{5} \times 100\% = \frac{400}{5}\% = 80$

$\frac{21}{25} \times 100\% = \frac{2100}{25}\% = 84\%$

$\frac{13}{15} \times 100\% = \frac{1300}{15}\% = 86.7\%$

$\frac{17}{20} \times 100\% = \frac{1700}{20}\% = 85\%$

She do best in social science.

5) $21 \div 2\frac{1}{3} = 21 \div \frac{7}{3} = 21 \times \frac{3}{7} = 9$

6)
a) $80,000 - 20,000 = 60,000$ liter
b) $\frac{60,000}{80,000} \times 100\% = \frac{600}{8}\% = 75\%$
c) $\frac{20,000}{80,000} \times 100\% = \frac{200}{8}\% = 25\%$

7) Original No= 1000
New No = 1200
increase = New No - Original No
= 1200 - 1000 = 200
Percentage increase = $\frac{Increase}{Original\ No} X\ 100\% = \frac{200}{1000} X\ 100\ \% = \mathbf{20\ \%}$

8)
$\frac{3}{4} - \frac{1}{3} X \frac{5}{3} \div \frac{2}{3} + \frac{1}{4} = \frac{3}{4} - \frac{1}{3} X(\frac{5}{3} \div \frac{2}{3}) + \frac{1}{4}$
$= \frac{3}{4} - \frac{1}{3} X (\frac{5}{3} X \frac{3}{2}) + \frac{1}{4} = \frac{3}{4} - \frac{1}{3} X \frac{5}{2} + \frac{1}{4}$
$= \frac{3}{4} - \frac{5}{6} + \frac{1}{4} = \frac{3}{4} + \frac{1}{4} - \frac{5}{6} = \frac{9+3-10}{12}$
$= \frac{12-10}{12} = \frac{2}{12} = \frac{1}{6}$

9)
$\frac{2}{3} - \frac{1}{4} X \frac{8}{5} + \frac{1}{3} = \frac{2}{3} - \frac{2}{5} + \frac{1}{3}$
$= \frac{2}{3} + \frac{1}{3} - \frac{2}{5} = \frac{10+5-6}{15}$
$= \frac{15-6}{15} = \frac{9}{15}$

6.1 Multiple Choice (Answers)

1. B
2. B
3. B
4. A
5. C
6. D

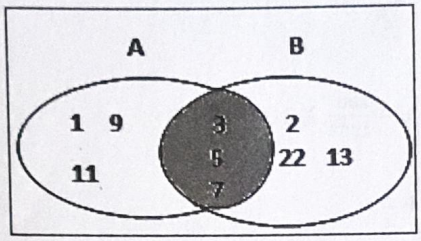
6.2 Answers (Solutions)

1. a)

i. A∪B = {1, 2, 3, 5, 7, 9,11, 13, 22}

ii. A∩B = {3, 5, 7}

b) A∩B



2.

a) A∪B = {1, 2, 3, 4, 5, 6, 7, 8, 10}

b) B∩C = {5)

c) A∪B∪C = {1, 2, 3, 4, 5, 7, 8, 10, 11, 12}

3.

a) A∪(B∪C) = {5, 6, 7, 8, 9, 11, 13, 15}

b) (A∩C)∪B = {7, 8, 11, 13}

4. B) $A \cup B$ = { 1,2,3,4,5,6,7,8}

T) $B \cap C$ = {5}

5. a) i) $\overline{A} \cup B$

$\overline{A}$ = { 1,6,7,8}

$\overline{A} \cup B$ = { 1,3,4,5,6,7,8}

ii) $\overline{A}$ (A complement)

$\overline{A}$ = { 1,6,7,8}

b) A ∩ B = { } or ∅

6. a) A ∩ C = { 1,2,3 }

b) $A \cup B$ = { 1,2,3,4,5 }

c) $B \cap C$ = { 1,2 }

d) $B \cup C$ = { 1,2,3,4,5,6 }

e) $A \cup C$ = { 1,2,3,6 }

7.1 Multiple Choice (Answers)

1. C
2. D
3. A
4. B
5. D
6. B
7. C
8. C
9. B
10. A
11. B
12. C
13. D
14. A
15. C
16. B
17. B
18. C
19. B
20. B
21. B
22. B
23. A
24. B
25. B
26. C
27. C
28. B
29. D.
30. A
31. C
32. B
33. D
34. A

7.2 Answers (Solutions)

1.

a) $7.2 \times 10^{-1} = 0.72$
$3.5 \times 10^{-2} = 0.035$
$0.72 + 0.035 = 0.755$
$0.755 = 7.55 \times 10^{-1}$

b) $2.4 \times 10^{5} = 240{,}000$
$1.2 \times 10^{-3} = 0.0012$
$240{,}000 - 0.0012$
$= 239999.99885$
$= 2.3999999885 \times 10^{5}$

c) $7.63 \times 10^{4} = 76300$
$1.36 \times 10 = 13.6$
$76300 - 13.6 = 76286.4$
$= 7.62864 \times 10^{4}$

2.

a) $\log 8 = \log 2 \times 2 \times 2$
$= \log 2 + \log 2 + \log 2$
$= 3 \times 0.3010 = 0.9030$

b) $\log 15 = \log 3 \times 5$
$= \log 3 + \log 5$
$= 0.4771 + 0.6990$
$= 1.1761$

c) $\log \frac{12}{5} = \log 12 - \log 5$
$= \log 2 \times 2 \times 3 - \log 5$
$= \log 2 + \log 2 + \log 3 - \log 5$
$= 2(0.3010) + 0.4771 - 0.6990$
$= 1.7091 - 0.6990 = 0.3801$

3.

a) $\log 24 = \log 2 \times 2 \times 2 \times 3$
$= 3 \log 2 + \log 3$
$= 3(0.3010) + 0.4771$
$= 0.9010 + 0.4771$
$= 1.3801$

b) $\log \frac{8}{3} = \log 8 - \log 3$
$= \log 2 + \log 2 + \log 2 - \log 3$
$= 3(0.3010) - 0.4771$
$= 0.9030 - 0.4771$
$= 0.4259$

c) $\log (3 \times 40)$
$= \log 3 \times 2 \times 2 \times 2 \times 5$
$= 0.4771 + 0.9030 + 0.6990$
$= 2.0791$

4. a) $23570000 = 2.357 \times 10^7$

b) $\frac{(3x^2)(x^5)(8x)^2}{(3x^3)(4x^2)} = \frac{3x^2 \times x^5 \times 64x^2}{12x^5} = \frac{192x^9}{12x^5} = \frac{192x^9}{12x^5} = 16x^4$

5. a) $\log_2 32 = \log_2 2^5 = 5 \log_2 2 = 5$

b) $\log_3 81 = \log_3 3^4 = 4 \log_3 3 = 4$

6. a) $0.0057 = 5.7 \times 10^{-3}$

b) $36000.0 = 3.6 \times 10^4$

7. a) $\log 30 = \log 2 \times 3 \times 5$
$= \log 2 + \log 3 + \log 5$
$= 0.3010 + 0.4771 + 0.6990$
$= 1.4771$

b) $\log 45 = \log 3 \times 3 \times 5$
$= \log 3 + \log 3 + \log 5$
$= 2(0.4771) + 0.6990$
$= 0.9542 + 0.6990$
$= 1.6532$

8. b) $\log 18 = \log 3 \times 3 \times 2$
$= \log 3 + \log 3 + \log 2$
$= 0.4771 + 0.4771 + 0.3010$
$= 0.9542 + 0.3010$
$= 1.2552$

t) $\log 8 = \log 2 \times 2 \times 2$
$= \log 2 + \log 2 + \log 2$
$= 0.3010 + 0.3010 + 0.3010$
$= 0.9030$

9. a) $16 = 2^x$
$2^4 = 2^x$
$x = 4$

b) $14x^2y^3 \div 7xy^5 = 2x^{2-1}y^{3-5}$
$= 2xy^{-2}$

10. $28x^4y^6 \div 7x^2y^7 = 4x^{4-2}y^{6-7} = 4x^2y^{-1} = \frac{4x^2}{y}$.

11. a) $(7.2 \times 10^{-1}) + (3.5 \times 10^{-2})$
$7.2 \times 10\text{-}1 = 0.72$
$3.5 \times 10^{-2} = 0.035$
$7.2 \times 10^{-1} + 3.5 \times 10^{-2} = 0.72 + 0.035 = 0.755$
$\therefore 7.2 \times 10^{-1} + 3.5 \times 10^{-2} = 7.55 \times 10^{-1}$

b) $(2.4X10^5)-(1.2X10^{-3})$

$2.4 \times 10^5 = 240{,}000$

$1.2 \times 10^{-3} = 0.0012$

$2.4 \times 10^5 - 1.2 \times 10^{-3} = 240{,}000 - 0.0012 = 239999.9988$

$\therefore 2.4 \times 10^5 - 1.2 \times 10^{-3} = 2.399999988 \times 10^5$

12. a). $0.005431 = 5.431 \times 10^{-3}$

b) $5.43 \times 10^{-5} = 0.0000543$

13. $60320105 = 6.0320105 \times 10^7$

14. b) $3^y = 9^{y-1}$

$3^y = 3^{2(y-1)}$

$y = 2y - 2$

$y - 2y = -2$

$-y = -2$

$\frac{-y}{-1} = \frac{-2}{-1}$

$y = 2$

15.t) i) $\log_7 49 = \log_7 7^2 = 2\log_2 7 = 2$

ii) $\log_5 625 = \log_5 5^4 = 4\log_2 5 = 4$

16. b) $2^x = 8$

$2^x = 2^3$

$x = 3$

t) $\text{Log}_4\ (256) = \log_4 4^4 = 4\log_4 4 = 4$

8.1 Multiple Choice (Answers)

1. C
2. B
3. C
4. B
5. B
6. B
7. B
8. D
9. B
10.B
11.A
12.D
13.B
14.C
15.A
16.C
17.A
18.**C**

19. B
20. A
21. C
22. B

8.2 Answers (Solutions)

1. Length= $\frac{P}{2} - b$

   $= \frac{30m}{2} - 7m = 15m - 7m$

   $= 8\,m$

2.

   a) $r = \frac{d}{2} = \frac{14\,m}{2} = 7m$

   b) $C = 2\pi r = 2 \times \frac{22}{7} \times 7m$ = 44 m

3.

   a) A = $\frac{1}{2}(a+b)h = \frac{1}{2}(20\text{ cm} + 24\text{ cm}) \times 12\text{ cm} = 34\text{ cm} \times 6\text{cm} = 204\ cm^2$

   b) A = Base × Height = 15 cm × 10 cm

   = 150 sm^2

   c) P = $2(l+b) = 2(12\ cm + 5000\ cm) = 2 \times 5012\ cm = 10024\ cm$

4. Area of rectangle = L × b = 8 cm × 6 cm = 48 cm^2

   Area of circle = $\pi r^2 = \frac{22}{7} \times 3.5\text{ cm} \times 3.5\text{ cm} = 38.5\text{ cm}^2$

   Shaded area = 48cm^2 – 38.5cm^2 = 9.5 cm^2

5. 1 rotation = Circumference

   $= 2\pi r = 2 \times \frac{22}{7} \times 3.5\ cm$

   = 22 cm

   20 times = 22 cm × 20 = 440 cm

   The distance is 440 cm or 4.4 m.

6. A = $\frac{1}{2}(4.5\ m + 5.5\ m) \times 4m$

   = 10 m × 2 m

   = 20 m^2

7. Shaded area = Area of the outer rectangle – Area of inner rectangle.

   = 17 cm × 13 cm – 13 cm × 5 cm

   = 221 cm^2 – 65 cm^2

   = 156 cm^2

8. Circumference of half circle = $\frac{1}{2}\pi dh = \frac{1}{2} \times \frac{22}{7} \times 14\text{ sm} = 22\text{ cm}$

   Perimeter of the rectangle = $2(dh + b)$ = 2 (14 + 24) = 62 cm

   perimeter of all the shape = 62 + 22 = 84 cm

9.1 Multiple Choice (Answers)

1. B
2. A
3. B
4. D
5. A
6. B
7. C
8. C
9. A
10. A
11. B
12. C
13. A
14. D
15. C.
16. A

9.2 Answers (Solutions)

1.

a) $v = \pi r^2 h$

$= 3.14 \times (9\ cm)^2 \times 12\ cm$

$= 3052.08\ cm^3$

t) S.A $= 2\pi r(r + h)$

$= 2 \times 3.14 \times 9cm(9cm + 12cm)$

$= 56.52 \times 21\ cm^3$

$= 1186.92\ cm^3$

2.

a) $v = \pi r^2 h$

$= \frac{22}{7} \times (3.5\ m)^2 \times 12\ m$

$= 462\ m^3$

b) $Volume\ of\ water = \frac{462m^3}{2} = \quad 231m^3$

3. $v = \pi r^2 h$

$= 3.14 \times (3\ cm)^2 \times 4\ cm$

$= 113.14\ cm^3$

4. $v = \pi r^2 h$

$= \frac{22}{7} \times (4\ cm)^2 \times 21\ cm$

$= 1056\ cm^3$

5. $v = \pi r^2 h$

$1056\ cm^3 = \frac{22}{7} \times r^2 \times 21\ cm$

$\frac{1056}{66} = \frac{66}{66} r^2$

$16 = r^2$

$r = 4cm$

6. $v = \pi r^2 h$

$616\ m^3 = \frac{22}{7} \times 7^2 \times j\ m$

$616\ m^3 = 22\ X\ 7 \times j$

$616\ m^3 = 154 \times j$

$\frac{616}{154} = \frac{154}{154}\ X\ j$

$4 = j$

$j = 4\ m$

ama $j = \frac{M}{\pi r^2}$

$j = 616\ m^3 \div \frac{22}{7}\ X\ 7^2$

$j = 616\ m^3 \div 22\ X\ 7$

$j = 616\ m^3 \div 154\ m^2$

$j = 4\ m$

10.1 Multiple Choice (Answers)

1. D
2. B
3. C
4. B
5. C

10.2 Answers (Solutions)

1.

a) $Speed = \frac{d}{t} = \frac{174\ km}{3\ hr} = 58\ Km/hr$

b) $Average\ speed$

$= \frac{Distance}{Total\ Time} =$

$\frac{174\ km - 30\ km}{2\ hr} = \frac{144\ km}{2\ hr} = 72\ km/hr$

c) $Time = \frac{Distance}{Average\ speed} = \frac{174\ km}{29\ km/hr} = 6\ hr$

2.

	Distance	Time	Speed
A	20 km	2 hours	**10 km/hr**
B	**135 km**	90 minutes	90 km/hr
C	45 km	**1.5 hour**	30 km/hr

3. v = 96 km/h

$t = \frac{15\ daqiiqo}{60} = \frac{1}{4} h$

$D = V.t = \frac{96km}{h} \times \frac{1}{4} h = \frac{96\ km}{4} = 24\ km$

4.

Distance (*m*)	Time (*sec*)	Speed (*m/s*)
80 m	2 seconds	**40 m/s**
180 m	3 seconds	60 m/s
20 m	**4 seconds**	5 m/s

5. $Speed = \frac{d}{t} = \frac{174\ km}{3\ hr} = 58\ Km/hr$

11.1 Multiple Choice(Answers)

1. C
2. D
3. C
4. B

11.2 Answers (Solutions)

1. Discount = 15% ka 8400 = $\frac{15}{100} \times \$8400 = \$1260$
   Selling Price= Normal price – discount = \$8400 – \$1260
   = \$7140
2.
   a) 15 × \$20 = \$300
   b) 15 × \$23 = \$345
   c) \$345 – \$300 = \$45

12.1 Multiple Choice (Answers)

1. C
2. A
3. B
4. B
5. D
6. B
7. B
8. A
9. B
10. B
11. A
12. B
13. A
14. D

15. C
16. B
17. C
18. B
19. C.
20. C.
21. C.
22. D
23. B.
24. C
25. C.
26. B.
27. .C.
28. D.
29. D

12.2 Answers (Solutions)

1.
   a) $y^0 = 45^0$ (Corresponding angles)
      $x^0 = 180^0 - 45^0$
      $x^0 = 135^0$
   b) $m^0 = 40^0 + 55^0 - 180^0$
      $m^0 = 85^0$
2. $x = 60^0$ (vertically opposite angles)
   $y = 60^0$ (alternating angles)
   $z = 180^0 - y = 180^0 - 60^0 = 120^0$
3. $x^2 = (30\text{ cm})^2 + (40\text{ cm})^2$
   $x^2 = 900\text{ cm}^2 + 1600\text{ cm}^2$
   $x^2 = 2500\text{ cm}^2$
   $x = 50\text{ cm}$
4.
   a) $l = 120^0$ (Vertically opposite angles)
   b) $y' = 120^0$ (alternating angles)
   c) $r = 180^0 - 120^0 = 60^0$

5. a) $AC^2 = AB^2 + BC^2$

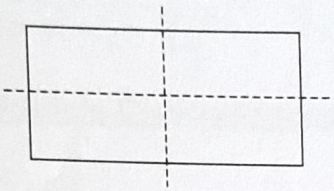
$= (16\ cm)^2 + (12\ cm)^2$

$= 256\ cm^2 + 144\ cm^2$

$= 400\ cm^2$

$AC = 20\ cm$

b) It has two lines of symmetry.



c) Area of ACD $= \frac{1}{2} \times s \times j$

$= \frac{1}{2} \times 16sm \times 12sm = 96cm^2$

6. $r = 72^0$ (alternating angles)

$s = 180^0 - 125^0 = 55^0$

7. Exterior angle $= \frac{360^\circ}{n} = \frac{360^\circ}{6} = 60^\circ$

8. Proof:

$x_1 + x_2 + 40^0 = 180^0$ (The sum of the angles on a triangle is 180^0)

$x_1 + x_2 = 180^0 - 40^0$

$x_1 + x_2 = 140^0$

$<DCA + 40^0 = 180^0$ (angles on a straight line)

$<DCA = 180^0 - 40^0$

$<DCA = 140^0$

$\therefore <DCA = x_1 + x_2$

9. $X + X + 80^0 = 180^0$

$2x + 80^0 = 180^0$

$2x = 180^0 - 80^0$

$\frac{2x}{2} = \frac{100}{2}$

$X = 50^0$

$< ABC - 50^0 = 180^0$

$< ABC = 180^0 - 50^0$

$\therefore < ABC = 130^0$

10. $x + 2x + 2x + 2x + 2x = 540^0$
$9x = 540^0$
$\frac{9x}{9} = \frac{540}{9}$
$X = 60^0$

11. $y = 120^0$ (Vertically opposite angles)
$X + 120^0 = 180^0$
$x = 180^0 - 120^0$
$x = 60^0$
$M = 120^0$ (alternating angles)
t= y (Vertically opposite angles)
M= s (Vertically opposite angles)
$s = 120^0$

12. $x + 2x + 2x + 2x + 2x + 10 = 720^0$
$9x = 720^0 - 10$
$\frac{9x}{9} = \frac{710^0}{9}$
$X = 78.88^0$

13.1 Multiple Choice (Answers)

1. C
2. B
3. C
4. D
5. C
6. D
7. A
8. D
9. A
10. B.
11. B.
12. C
13. A

13.2 Answers (Solutions)

1. 60, 75, 80, 75, 90, 50
   a) Mean $= \frac{60+80+75+75+90+50}{6} = \frac{430}{6} = 71.67$
   b) 50, 60, 75, 75, 80, 90
   The mode is 75.
2. 3, 4, 5, 5, 5, 6, 7, 8, 8, 9, 9, 10
   a) $Median = \frac{6+7}{2} = \frac{13}{2} = 6.5$

b) $Mean = \frac{3+4+5+5+5+6+7+8+8+9+9+10}{12} = \frac{79}{12} = 6.58$

3.

Mean of the three girls = 3 x 9 = 27 Years
Two of them = 11 + 7 = 18 Years
the third girl = 27 - 18 = 9 Years

14.1 Multiple Choice (Answers)

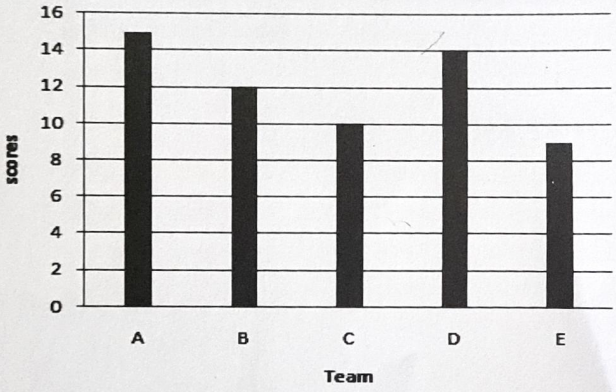
1. C
2. C
3. D
4. D
5. A
6. D

14.2 Answers (Solutions)

1. A(2, 3)
B(1, -4)
C(0, 4)
D(-4 -3)

2.

a)



b) Team A

c) 1 Point

d) Mean = $\frac{15+12+10+14+9}{5} = \frac{60}{5} = 12$

3.

a) Area of Banana = $\frac{120^{\circ}}{360^{\circ}} \times 24\ hi = \frac{2880}{360} = 8\ hi$

b) Area of rice = $\frac{100^{\circ}}{360^{\circ}} \times 24\ hi = \frac{2400\ hi}{360} = 6.67\ hi$

4.

a) Rice = $\frac{80^{\circ}}{360^{\circ}} \times 24\ hi = \frac{1920\ hi}{360} = 5.33\ hi$

b) uncultivated land = $\frac{90^{\circ}}{360^{\circ}} \times 24\ hi = \frac{2160\ hi}{360} = 6\ hi$

15.1 Multiple Choice (Answers)

1. C
2. A
3. C
4. D

15.2 Answers (Solutions)

1.

a) P(red) = $\frac{4}{12} = \frac{1}{3}$

b) P(not red) = $\frac{8}{12} = \frac{2}{3}$

c) P(Red or Black) = $\frac{4}{12} + \frac{5}{12} = \frac{9}{12} = \frac{3}{4}$

16.1 Multiple Choice (Answers)

1. D
2. B
3. B
4. B
5. A
6. B
7. C
8. D
9. C
10. A
11. A
12. A
13. B
14. A
15. C
16. A
17. C
18. A
19. D
20. A
21. B
22. D

23. B
24. A
25. A
26. B
27. B
28. C
29. A.
30. C
31. B
32. A
33. A
34. B.
35. D
36. B
37. C
38. B.
39. A.
40. A,

16.2 Answers (Solutions)

1.

a) $\frac{16x^2+8x}{4x} = \frac{16x^2}{4x} + \frac{8x}{4x} = 4x + 2$

b) $(2y - 3)(y + 2) = 2y^2 + 4y - 3y - 6 = 2y^2 + y - 6$

2.

$$\begin{array}{r|l} 3 & x + y = 2 \\ -1 & 3x + 2y = 5 \\ & 3x + 3y = 6 \\ & -3x - 2y = -5 \\ & y = 1 \end{array}$$

$x + y = 2$
$x + 1 = 2$
$x = 2 - 1$
$x = 1$
Solution set = {1, 1}

3. $m = \frac{y_2-y_1}{x_2-x_1} = \frac{-1-3}{-4-(-2)} = \frac{-4}{-2} = 2$

Equation of straight line that passes through (-2, 3):
$y = mx + c$
$3 = 2(-2) + c$
$3 + 4 = c$
$7 = c$
Equation of straight line is: $y = 2x + 7$

4. $2y^2 - 5y - 3 = 0$
$2y^2 - 6y + y - 3 = 0$
$2y(y-3) + 1(y-3) = 0$
$(2y+1)(y-3) = 0$
$2y + 1 = 0 \quad y - 3 = 0$
$y = -\frac{1}{2} \quad y = 3$
$Solution\ Set = (-\frac{1}{2}, 3)$

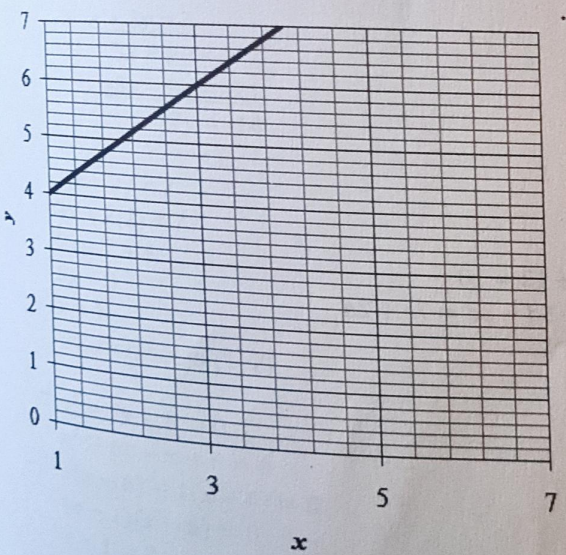
5.
a) $3x + 2 - 7x - 4 + 5x + 6$
$3x - 7x + 5x + 2 - 4 + 6 =$
$x + 4$

b) $(14x + 5y) - (7x - 6y)$
$= 14x + 5y - 7x + 6y$
$= 7x + 11y$

c) $-9x(x-3) = -9x^2 + 27$

6. $x^2 - 5x - 24 = 0$
$x^2 - 8x + 3x - 24 = 0$
$x(x-8) + 3(x-8) = 0$
$(x+3)(x-8) = 0$
$x + 3 = 0 \quad x - 8 = 0$
$x = -3 \quad x = 8$
$Solution\ set = (-3, 8)$

7.



8.

$6 \mid 3x + 5y = 8$
$-3 \mid 6x - 2y = 4$
$18x + 30y = 48$
$-18x + 6y = -12$
$36y = 36$
$y = 1$

$3x + 5y = 8$
$3x + 5 = 8$
$3x = 8 - 5$
$3x = 3$
$x = 1$
solution set is {1, 1}.

9.

a) $\frac{4x}{3} = 12$
$4x = 36$
$x = 9$

b) $\frac{x-2}{3} = \frac{x+3}{4}$
$4(x-2) = 3(x+3)$
$4x - 8 = 3x + 9$
$4x - 3x = 9 + 8$
$x = 17$

10. $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-2}{-1-1} = \frac{-6}{-2} = 3$

11. $Age\ of\ Zainab = x$
$Age\ of\ Ismail = x + 12$
$x + 12 + 6 = 2(x + 6)$
$x + 18 = 2x + 12$
$x = 6$
$Zainab's\ age = 6$
$Ismail's\ Age = x + 12 = 6 + 12 = 18$

12. $8c + 5d - c - 3d = 8c - c + 5d - 3d = 7c + 2d$

13. $4(2x - 7) = 12$
$8x - 28 = 12$
$8x = 12 + 28$
$8x = 40$
$x = 5$

14. $5a = 10$ so $a = 2$

$5a + 5b = 15$

$5(2) + 5b = 15$

$10 + 5b = 15$

$5b = 15 - 10$

$5b = 5$

$b = 1$

15. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(6)(2)}}{2(6)}$

$x = \frac{7 \pm \sqrt{49 - 48}}{12}$

$x = \frac{7 \pm \sqrt{1}}{12}$

$x = \frac{7 \pm 1}{12}$

$x_1 = \frac{7 + 1}{12} = \frac{8}{12} = \frac{2}{3}$

$x_2 = \frac{7 - 1}{12} = \frac{6}{12} = \frac{1}{2}$

$Solution\ set = \left\{\frac{1}{2}, \frac{2}{3}\right\}$

16.

$1 \mid 3x + 2y = 7$

$-3 \mid x + 3y = 7$

$3x + 2y = 7$

$-3x - 9y = -21$

$-7y = -14$

$y = 2$

$3x + 2y = 7$

$3x + 2(2) = 7$

$3x = 7 - 4$

$3x = 3$

$x = 1$

Solution set is {1, 2}.

17. $x^2 - 7x + 6 = 0$

$x^2 - 6x - x + 6 = 0$

$x(x - 6) - 1(x - 6) = 0$

$(x - 1)(x - 6) = 0$

$x - 1 = 0 \qquad x - 6 = 0$

$x = 1 \qquad x = 6$

$Solution\ set = (1, 6)$

18.

a) $6x^2 + 7x + 1$

$= 6x^2 + 6x + x + 1$

$= 6x(x + 1) + 1(x + 1)$

$= (6x + 1)(x + 1)$

b) $2x^2 + 2x - 12 = 0$

$2x^2 - 4x + 6x - 12 = 0$

$2x(x - 2) + 6(x - 2) = 0$

$(2x + 6)(x - 2) = 0$

$2x + 6 = 0 \quad x - 2 = 0$

$x = -3 \quad x = 2$

$Solution\ set = (-3, 2)$

19.

$x + y = 24$

$\underline{x - y = 10}$

$2x = 34$

$x = 17$

$x + y = 24$

$17 + y = 24$

$y = 24 - 17$

$y = 7$

The two numbers are 17 and 7.

20. $x^2 + x - 6 = 0$

$x^2 - 2x + 3x - 6 = 0$

$x(x - 2) + 3(x - 2) = 0$

$(x + 3)(x - 2) = 0$

$x + 3 = 0 \quad x - 2 = 0$

$x = -3 \quad x = 2$

$Solution\ set = (-3, 2)$

21. $4x^2y + 12xy^2 = y = 4xy(x + 3y)$

22. Let the first number be x

Let the other number be y.

$x \cdot y = 72$

$x + y = 17$

$x = 17 - y$

$(17 - y)y = 72$

$-y^2 + 17y - 72 = 0$

$y^2 - 17y + 72 = 0$

$y^2 - 8y - 9y + 72 = 0$

$y(y - 8) - 9(y - 8) = 0$

$(y - 8)(y - 9) = 0$

$y = 8,\ y = 9$

$x = 17 - y = 17 - 8 = 9$

$x = 17 - y = 17 - 9 = 8$

The two numbers are 8 and 9

23. b) $m = \frac{y_2 - y_1}{x_2 - x_1} =$

$7 = \frac{y_2 - 1}{4 - 3}$

$7 = y_2 - 1$

$y_2 = 7 + 1$

$y_2 = 8$

t) $36x^5 - 9x^3 = 9x^2(4x^3 - 1)$

24.

$X^2 + 2X - 15 = 0$

$X^2 + 5x - 3x - 15 = 0$

$x(x + 5) - 3(x + 5) = 0$

$(x - 3)(x + 5) = 0$

$(x - 3) = 0$ or $(x + 5) = 0$

$x = 3$ or $x = -5$

$Solution\ set = (3, -5)$

25.

Let the son be X

and father be X + 35

$x + x + 35 = 55$

$2x + 35 = 55$

$2x = 55 - 35$

$2x = 20$

$\frac{2x}{2} = \frac{20}{2}$

x = 10 Years (Son)

Father = x + 35 = 10 + 35 = 45 years

26. $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-2}{-2-3} = -\frac{2}{5}$

Y= mx+c $2 = -\frac{2}{5}(3) + c$

C= $\frac{16}{5}$

$y = -\frac{2}{5}x + \frac{16}{5}$

27. Graph of these equation below

$2x - 3y = -5$

$3x + 2y = 12$

17.2 Answers (Solutions)

$\tan 60^0 = \frac{O}{A}$

$\tan 60^0 = \frac{5}{X}$

$(\tan 60^0)(x) = 5$

$\frac{(1.7321)(X)}{1.7321} = \frac{5\ m}{1.7321}$

$X = \frac{5\ m}{1.7321}$

$X = 2.\ 887\ m$

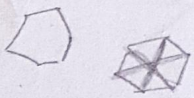
2. . $\tan 30^0 = \frac{Opposite}{Adjacent}$

$\tan 30^0 = \frac{X}{6\ m}$

$(\tan 30^0)(\ 6m) = X$

$(0.5774)(6m) = X$

$X = 3.\ 4644\ m$



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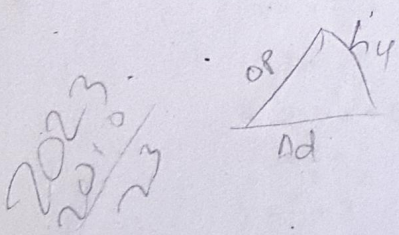

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Mathematics
Workbook with Key

BAABUSALAAM

Mathematics
Workbook with Keys

This book contains Mathematics questions with their keys.

The types of questions in this book fall under the following categories:

1. Multiple Choice Questions
2. Structured Questions
3. Extended Questions

This book will help primary students to familiarize themselves with the form at of Somaliland national examinations are performed and to test themselves the level of their knowledge of Mathematics.

NOTICE: First, the students should answer the questions without consulting the keys to the questions. The keys are only intended for reference and checking when the work isdone.

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