Review Worksheet

I. Choose the correct option.

   i. If B is the set of days in the month of Ramzan, then it is a/an_____set.

       A. empty   **B.** finite

       C. infinite   **D.** universal

   ii. If A is a set of animals in the world, then then A is a/an_____set.

       A. empty   **B.** finite

       C. infinite   **D.** singleton

   iii. If D = Students of your class of age 5 years, then D is a/an _____set.

       A. empty   **B.** finite

       C. infinite   **D.** singleton

   iv. If C is a set of composite numbers less than 4, then C is a/an_____set.

       A. empty   **B.** singleton

       C. finite   **D.** infinite

   v. If A = {a, b, c, d}, then b _____ A.

       A. ∅   **B.** ∉

       C. ∈   **D.** >

2. Write the elements of the following sets.

   a. A = Set of odd numbers from 11 to 21

   b. D = Set of prime numbers less than 20

   c. C = Set of even numbers between 15 and 25

d. B = Set of months beginning with letter A

3. Which of the following sets are finite, infinite or empty.

   a. Set of days in a week

   b. A = {12, 14, 16, 18, 18, 20, ...}

   c. Set of odd numbers exactly divisible by 2

   d. B = {15, 17, 19, 21}

   e. Set of even numbers that can be divided exactly by 3

4. Write ∈ or ∉.

   a. 17 ⬭ the set of even numbers

   b. horse ⬭ the set of birds

   c. 9 ⬭ {1, 3, 5, 7, 9, 11}

   d. pegion ⬭ {cow, goat, cat, dog}

   e. 27 ⬭ the set of odd numbers

5. Write the following sets in tabular form.

   a. A = Set of first 5 prime numbers

   b. B = Set of odd numbers less than 10

   c. C = Set of the months with less than 30 days

d. C = Set of natural numbers between 2 and 10

6. Write the following sets in descriptive notation.

a. A = {5, 7, 9}	**b.** B = {January, June, July}
c. C = {a, e, i, o, u}	**d.** P = {1, 2, 3, 5, 7}

7. Represent the following sets using Venn diagrams.

    a. U = {1, 2, 3, ..., 20},

        A = Set of prime numbers less than 20

        B = Set of multiples of 5 less than or equal to 20.

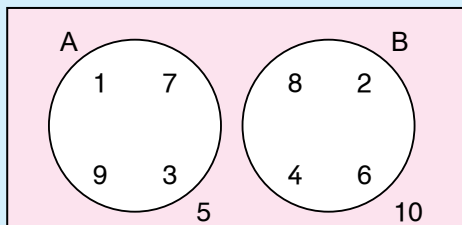**b.** U = {10, 20, 30, ..., 100}

A = {10, 30, 60, 90}

B = {40, 80}

c. U = {0,1,2,......10}

A = {0, 2, 4, 6, 8}

B = {1, 3, 5, 7, 9}

8. Write universal set, set A, and set B in tabular form using the following Venn diagram.
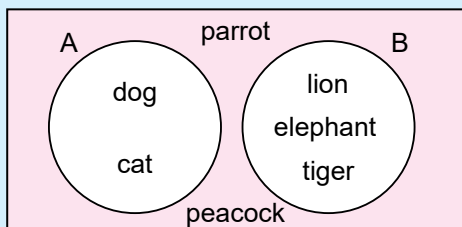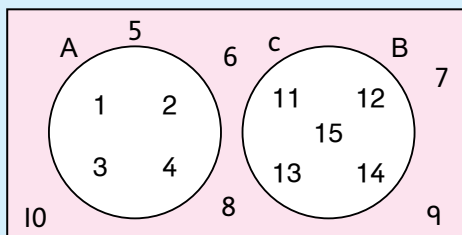
a. $\mathbb{U}$

b. $\mathbb{U}$
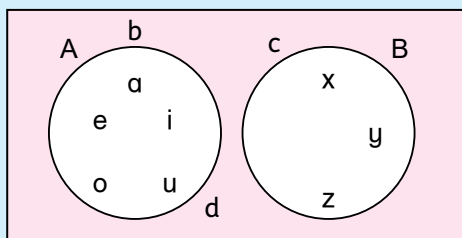
c. $\mathbb{U}$

d. $\mathbb{U}$

Review Worksheet

I. Choose the correct option.

  i. On a number line all positive integers lie to the _____ of zero.

   A. left   **B.** right

   C. above   **D.** below

  ii. The absolute value of an integer is its distance from _____.

   A. 100   **B.** positive integer

   C. 0   **D.** negative integer

  iii. 100 _____ – 100

   A. $\leq$ **B.** =

   C. >   **D.** <

  iv. The absolute value of an integer can never be _____.

   A. positive   **B.** 1

   C. 0   **D.** negative

  v. According to the distributive law, _____.

   A. $a \times (b + c) = a \times b + a \times c$ **B.** $a \times b = b \times c$

   C. $a + b = b + c$ **D.** $a \times (b \times c) = (a \times b) \times c$

2. Arrange the following in the ascending order.

a. |–12|, |–14|, – 8, |8|, |–3|	**b.** 16, |–9|, |15|, |–8|, –27
c. 39, – 52, |–35|, |–66|, |77	**d.** |–2|, |–18|, 85, |–76|, –45

3. Different temperatures are given in the following table.

Condition	Temperature in Celsius.
Boiling point of water	100
Average oven temperature	180
Temperature of human body	37
Freezing point of water	0
Freezing point of mercury	−38.8
Temperature of dry ice	−80
Temperature of lunar day	120
Temperature of lunar night	−160

a. Write down the highest temperature.

b. What is the difference in temperature between the lunar day and lunar night?

c. Arrange the temperatures in order from lowest to highest.

d. What is the sum of the temperatures of dry ice and freezing point of mercury?

4. Simplify the following:

a. (−32) + (12) + 40	**b.** 240 + (−58) + (−30)
c. (−100) − (−90) + (−20)	**d.** 15 + (−18) − (−5)

5. Find the products of the following.

a. (−15) × 10 (−1)	**b.** (−44) × 100 × (−10)
c. 25 × −30 × (−40)	**d.** (−4) × 25 × (400)

6. Divide the following.

a. (−63) ÷ 9	**b.** 112 ÷ (−7)

c. (−64) ÷ (−8)

d. (−231) ÷ (−11)

7. Simplify the following.

a. 4 × (−29) + 8 × (−3)

b. −5 × (−3 + 4)

c. 2 × (9 − 1) + 7 × (−2)

d. 12 × (−21 + 9) + (− 3)

e. 8 + (−3) × (−6 + 12)

f. −6 × 3 + 4 + (−9)

g. 7 + (−6) + 3 × (−1)

h. −9 × (−2 + 0)

8. The sum of two integers is –148. If one of them is 180, find the other.

9. The sum of two integers is 92. If one of them is –45, find the other.

10. On a certain day in Quetta, the temperature rose to 12°C. At midnight the temperature fell to –3°C. Find the difference in temperatures.

Review Worksheet

I. Choose the correct option.

i. If there are multiple mathematical operations involved in a problem, _____ rule is followed to solve it.

   A. thumb rule   **B.** BODMAS

   C. commutative   **D.** left to right

ii. To simplify $8 + 12 \times 2$, first perform _____.

   A. 12×2 **B.** $8 + 12$

   C. $8 + 2$ **D.** 8×2

iii. The simplified form of $4 + (-3 - 2) + 8$ is _____.

   A. 5   **B.** -7

   C. 7   **D.** 17

iv. If there are multiple brackets enclosed in one another in a problem, then _____ is simplified first.

   A. outermost bracket   **B.** square bracket

   C. parenthesis   **D.** innermost brackets

v. The value of $7 + \{6 - (9 - 2)\} \times 4$ is _____.

   A. 11   **B.** -11

   C. 3   **D.** -3

2. Simplify the following.

a. $14 - [16 - \{17 - (18 - 6 - 3)\}]$	**b.** $\{6 \times (24 \div 12 - 9) - 12\} - \{8 \times 10 + (-4)\}$

c. $(-54 - 42) \div \{9 + (-5 \times -8) \div 4 - 3\}$

d. $10 - [8 - \{2 - (7 - 9 + 2 - 3)\}]$

e. $-27 - [18 - \{16 - (9 - 8 - 1)\}]$

3. Simplify the following involving fractions and decimal numbers.

a. $5\frac{1}{7} - \{3\frac{3}{10} \div \{2\frac{4}{5} - \frac{7}{10}\}$

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

c. $2.04 \div [1.56 \div \{2.4 - (1.8 \times 0.3 + 0.6)]$

d. $2.95 + \{3.02 \times (6.125 \div 5.196 - 2.746)\}$

4. In the first two rounds of a game, Basit gained 18 and 20 points respectively. In the third round he lost 15 points. What was his score after three rounds?

5. How many pieces of ribbon, each 0.8 metres long, can be cut from a 25.6 metres long ribbon?

6. How many cups, each containing 0.3 litres tea, can be filled from a thermos containing 16.2 litres?

Multiples and Factors

Review Worksheet

I. Choose the correct option.

   i. The number which divides a given number completely is called its _____ .

      A. factor   **B.** multiple

      C. remainder   **D.** none of these.

   ii. There are _____ multiples of a number.

      A. only one   **B.** only two

      C. finite   **D.** infinite

   iii. The expanded form of 4^6 is _____.

      A. $6 \times 6 \times 6 \times 6$ **B.** $4 \times 4 \times 4 \times 4 \times 4 \times 4$

      C. $6 \times 6 \times 6 \times 6 \times 6 \times 6$ **D.** $4 \times 4 \times 4 \times 4$

   iv. The index notation of 625 is _____.

      A. 3^7 **B.** 4^5

      C. 5^3 **D.** 5^4

   v. Product of two numbers is equal to the product of their _____.

      A. multiples and factors   **B.** LCM and HCF

      C. sum and difference   **D.** squares

2. Find the HCF of the following using division method.

a. 36 and 84	b. 60 and 96
c. 36, 54, and 108	d. 84, 132, and 156

3. Find the LCM of the following using division method.

a. 45 and 50	**b.** 42, 48, and 56

4. The HCF and LCM of two numbers are 8 and 504, respectively. If one of the numbers is 72, find the other number.

5. Express the following as a product of prime factors. Write the answer in index notation.

a. 350	**b.** 6912	**c.** 210

6. Find the greatest mass that can be taken as exact number of times from 360g, 504g and 672g.

7. A rectangular field measures 308 m by 228 m. Fencing posts are placed along its sides at equal distance apart. If the posts are as far apart as possible, what is the distance between them?

8. Find the smallest mass that can be measured in equal amount of 6 kg, 9 kg, and 12 kg.

9. Find the least length of a rope that can be cut into two pieces of length 30m, 36m, and 54m.

10. Find the smallest sum of money that is an exact multiple of Rs72, Rs 80, and Rs 96.

Review Worksheet

I. Choose the correct option.

  i. Ratio is the comparison of different quantities having the same _____.

   A. factor   **B.** units

   C. direction   **D.** length

  ii. _____ cannot be the term of a ratio.

   A. –1   **B.** 1

   C. 0   **D.** 0.1

  iii. The ratio a:b is equivalent to _____.

   A. $\dfrac{a}{b}$ **B.** $a \times b$

   C. $\dfrac{b}{a}$ **D.** $b \times a$

  iv. Ratio of 15 m to 20 m Is written as _____.

   A. 15 m : 20 m   **B.** 20: 15

   C. 20 m : 15 m   **D.** 4 : 3

  v. If a : b = 2 : 3 , c : b = 4 : 3 then a : b : c

   A. 2 : 3 : 4   **B.** 4 : 3 : 2

   C. 2 : 4 : 3   **D.** 3 : 2 : 4

2. Express the following in ratios and write the simplest form.

a. 10 grams to 50 grams	**b.** 250 mm to 500 mm
c. 600 litres to 200 litres	**d.** Rs 118 to Rs 84

3. Find the continued ratio b : c : d if b : c = 1 : 2 and c : d = 3 : 5.

4. Find the continued ratio among Rs 20, Rs 40, and Rs 60.

5. The length and width of a rectangle are 6 m and $\dfrac{9}{5}$ m respectively. Find the ratio of the width to the length.

6. Salman is 18 years old. His elder brother Asim is six years older than Salman. Find the ratio of Hannans age to the Asim's age.

7. Ratio of mass of sugar to the mass of soup is 5 : 8. How many times is soap heavier than sugar?

8. In a zoo, the ratio of boys to girls is 5 : 6 and that of girls to parents is 3 : 10. Find the ratio of boys to girls to parents in simplest form .

9. Sohail earns Rs 15,150 in 6 days. How much does he earn in 4 days?

10. A printer prints 330 pages in 15 minutes. At this rate, how may pages will the printer print in 20 minutes?

Review Worksheet

I. Choose the correct option.

i. 40% is equal to _____ .

A. $\dfrac{2}{5}$ B. $\dfrac{3}{10}$

C. 5 D. $\dfrac{1}{2}$

ii. If 60% of Rs 1000 spent, then the expenditure is _____ .

A. Rs 600 B. Rs 40

C. Rs 65 D. Rs 400

iii. Rupees 5 is _____ of Rs 25.

A. 5% B. 10%

C. 20% D. 30%

iv. I. If 100% = Rs 120, then Rs 84 is

A. 120% B. 20%

C. 70% D. 30%

v. If 75% of pupils in a class of 40 passed in a Science test, _____ of them failed.

A. 10 B. 30

C. 25 D. 2

2. One–fifth of the water tank is empty. What percentage of the tank is filled with water?

3. In a class, out of 60 students, 10% of students failed. How many students passed the exams?

4. Adila saves 16% of her monthly salary. If she gets Rs 21 000 per month, how much does she save every month?

5. The total number of students in a school is 1650. 70% of the pupils are boys. How many girls are there in the school?

6. The population of a town increased from 25000 to 30000. Find the percentage increase.

7. The price of a property decreased from Rs 975500 to Rs 829175. Find the percentage decrease.

8. The height of a boy increases from 108 cm to 135 cm over 1 year. By what percentage did his height increase?

Introduction to Algebra

Review Worksheet

I. Choose the correct options.

   i. term–to–term rule for the sequence 5, 8, 11, 14 is _____.

      A. add 5　　　　　　　　　　**B.** subtract 3

      C. add 3　　　　　　　　　　**D.** subtract 5

   ii. The quantities with fixed numerical values are called _____.

      A. constants　　　　　　　　**B.** variables

      C. terms　　　　　　　　　　**D.** letters

   iii. In $3y + 4x + 3 - 2x$, the like terms are _____.

      A. $3y$ and 3　　　　　　　　**B.** $4x$ and $2x$

      C. $4x - 2x$　　　　　　　　　**D.** $4y + 8$

   iv. The value of $3x - 6$, when $x=2$ is _____.

      A. 0　　　　　　　　　　　　**B.** −6

      C. 9　　　　　　　　　　　　**D.** 12

   v. The coefficient of xy in the expression, $3x - 9y + 6yz$ is:

      A. 3　　　　　　　　　　　　**B.** 9

      C. 6　　　　　　　　　　　　**D.** −9

2. State the term–to–term rule and write the missing terms of each sequence.

   a. 50, 100, (_____), 200, (_____), (_____)

   b. 1500, 1300, (_____), (_____), 700, (_____)

   c. 4, 8, 12, (_____), (_____), (_____)

   d. (_____), 98, 96, 94, (_____), (_____)

3. Find the sum of the following expressions.

a. $y^3 + 2y + 3y^2 - 7, \quad 7y - 4y^2 + 3y^3 + 8$

b. $2a + 3b, 3a - 4b$

c. $a + b - c, 3a + b - 2c$

d. $4a - 3b + 5c, -5a + 4b - c$

e. $3x^3 - 4x^2 + 5x + 1, x^3 + 2x^2 - 3x + 4, 4x^3 - 3x^2 + 4x - 5$

f. $3bc + 2bc - 9ac + a^2, -3ac + 4bc + 5bc - a^2$

4. Subtract the following.

a. $5a$ from $8a$	**b.** $-2x$ from $x + 1$
c. $8x + y + z$ from $6x + 2y + 2z$	**d.** $2a - 3b + 7$ from $-2a - 3b + 7$
e. $2x + 1$ from $-x$	**f.** $a^2 + 4b^2 - 2c^2$ from $3a^2 - 7b^2 - 3c^2$

5. Simplify the following.

a. $3a + 5c + a + 4a + 2b + 4c$

b. $2ab + 5xy - ab - 8xy + 9 + 8ab$

c. $7x + 2x^3 + 4x^2 - 3x^2 + 8x^3$

d. $4x + 7x^3 + 4x + 7x^2 + 6x - 2x^3$

e. $a + 2b - 3c - 4a - b + 2c$

f. $(a^2 + 2a + 1) - (b^2 + 2a - 1)$

6. Evaluate the following expressions.

a. $4x + y$ when $x = 3$, $y = 5$

b. $b^2 + c$ when $b = 1$, $c = -4$

c. $m + n^5$ when $n = -3$, $m = 8$

7. Ahmed received an e-mail message from his friend. After 10 minutes, Ahmed forwarded. This e-mail to 2 of His friends. After 10 more minutes, each of two friends forwarded the message to two more friends. If the message was forwarded like this every 10 minute, how many people received Ahmads e-mail after 40 minutes?

Linear Equations

Review Worksheet

I. Choose the correct option.

   i. An algebraic statement in which symbol _____ is used is called an equation.

   A. $<$ B. $>$

   C. $=$ D. $<=$

   ii. Equation for the statement "3 is added to the twice of a number to get 45" is

   _____.

   A. $2 + 3x = 45$ B. $2(3 + x) = 45$

   C. $(x + 2)3 = 45$ D. $2x + 3 = 45$

   iii. For a = _____, the equation, $a \times 3 = 215$ is true.

   A. 70   B. 71

   C. 71.66   D. 71.5

   iv. Number 2 is the solution of _____.

   A. $4x - 6 = 2$ B. $2x = 8$

   C. $4x + 6 = 23$ D. $4x - 3 = 7$

   v. _____ is an open sentence.

   A. $2 + 3 = 5$ B. $11 - 5 = 6$

   C. $x + 3x = 4x$ D. $x + 3 = 9$

2. Solve the following equations:

   a. $3x - 4 = 17$

   b. $\dfrac{x + 1}{2} = 5$

c. $\dfrac{x-5}{3} = 1$

d. $\dfrac{4x-70}{2} = 1$

e. $\dfrac{x}{7} - 3 = 2$

f. $\dfrac{x}{2} - \dfrac{x}{3} = 1$

g. $3x - \dfrac{x}{2} = 5$

h. $\dfrac{x}{3} + \dfrac{3x}{2} = 11$

3. How many rupees each student receive if Rs 63 is divided between two students in such a way that one gets 6 times as much as the other?

4. If a number is tripled and the result is increased by 5, we get 44. Find the number.

5. Twice a number added to half of itself equals 20. Find the number. In 12 years, a man will be twice as old as he was 12 years ago. Find his present age.

6. Thrice a number decreased by 5 exceeds twice the number by one. Find the number.

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7. Maira is senior to Faiza by 18 years. After 6 years, Maira will be twice as old as Faiza. Find Maira's present age.

8. Mohib is five times as old as his son. Difference between their ages is 40 years. Find their age.

Review Worksheet

I. Choose the correct option.

   i. Two lines are said to be _____ if they never meet or interest each other.

      A. parallel   **B.** perpendicular

      C. transversals   **D.** equal

   ii. In the given figure FI, angles mI and m^2 are _____.

      A. alternate   **B.** corresponding

      C. vertically opposite   **D.** complementary

   iii. In the given figure FI, angles lI and m2 are

      A. alternate   **B.** corresponding

      C. vertically opposite   **D.** interior

   iv. The sum of interior angles is always _____.

      A. 360º   **B.** 270º

      C. I80º   **D.** 90º

   v. The number of lines of symmetry of a regular polygon is equal to _____.

      A. exterior angle   **B.** number of sides

      C. number of diagonals   **D.** number of interior angles

2. Two angles are supplementary. One angle measures.$(4x-I0)$o. The other angle measures $(x-I5)$o. What is value of x?

3. Find the value of the unknown angles in the given figures.

a.
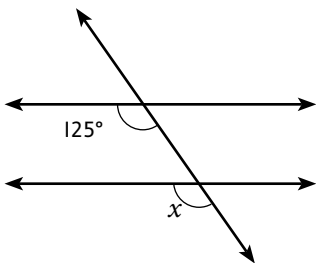
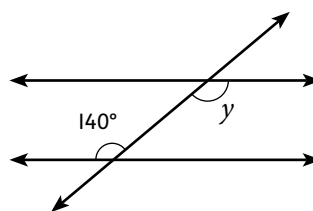135°

x

b.

x 69°

c.

125°

x

d.

140°

y

e.

138°

z
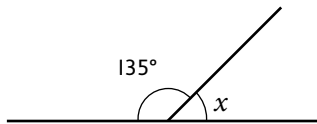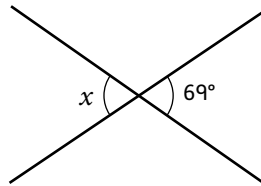
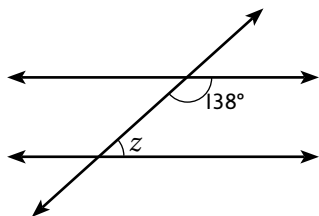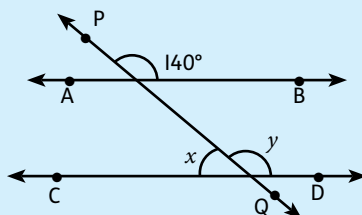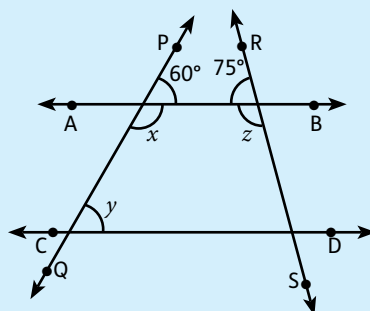**4.** In the given figure, $\overleftrightarrow{AB}$ II $\overleftrightarrow{CD}$ and $\overleftrightarrow{PQ}$ is a transversal cutting them at two points. Find $\angle$x and $\angle$y.

5. In the given figure $\overleftrightarrow{AB}$ II $\overleftrightarrow{CD}$ $\overleftrightarrow{PQ}$ and $\overleftrightarrow{RS}$ are two transversals. Evaluate the angles x, y and z.

6. Construct an equilateral triangle XYZ and a line. Draw reflected image of triangle XYZ.

7. Construct a square ABCD and its reflected image at some distance. Draw line of reflection line between both figures.

Review Worksheet

I. Choose the correct option.

i. If the area of a rectangle is 91 cm^2, then the measurements of its length and breadth are _____.

    A. Length = 23 cm, Breadth = 17 cm

    B. Length = 1.3 cm, Breadth = 0.7 cm

    C. Length = 26 cm, Breadth = 3.5 cm

    D. Length = 13 cm, Breadth = 7 cm

ii. A horse runs around a square garden twice, and covers a length of 8 km. This means the side of the square garden is _____

A. 1 km	**B.** 1.5 km
C. 4 km	**D.** 2 km

iii. If the base of a triangle is 5 cm and its height is 7 cm, then its area is _____.

A. 17.5 cm^2	**B.** 35 cm^2
C. 12.5 cm^2	**D.** 15 cm^2

iv. If each side of an equilateral triangle is 3.5 cm, then its perimeter is _____.

A. 11 cm	**B.** 10.5 cm^2
C. 10.5 cm	**D.** 10 cm

v. If perimeter of a square and a rectangle are both equal to 20 cm, then _____ more area.

A. square has	**B.** rectangle has
C. both have	**D.** none of these

2. A rectangular piece of land measures 8 m by 5 m. It is to be fenced with 4 lines of wire. What length of wire is needed?

3. A rectangular garden is 105 m by 75 m. How many rounds of this garden will a boy complete, if he runs 3600 metres?

4. The size of a Pakistani flag is 5 m by 3 m while the size of its green part is 3 m by 1.5 m. What is the area of white part of the flag?

5. Calculate the perimeter of a rectangle whose length and breadth are 15 m and 12 m respectively. Find the cost of fencing the field at the rate of Rs 25 per metre

6. A garden 150 m long and 80 m wide has a road 4 m wide all around on the outside. Find the cost of paving the road at the rate of Rs 120 per m^2.

7. A house 20 m long and 15 m wide is surrounded by a verandah of uniform width of 3 m. Find the cost of flooring the verandah at Rs 200 per m^2.

8. A park is parallelogram shaped. Its base is 400 m and its height is 250 m. Find the area of a 10 m wide road around the park.

Review Worksheet

I. Choose the correct option.

    i. The mean value of the data, 2, 3, 3, 4, 5, 7, is _____.

        A. 2   **B.** 3

        C. 4   **D.** 7

    ii. The mode of 101, 218, 110, 101, 226, 230, 226, 101, 110 is _____

        A. 110   **B.** 101

        C. 226   **D.** 230

    iii. The median of the data, 100, 150, 150, 200, 250, 250, is _____.

        A. 100   **B.** 150

        C. 200   **D.** 250

    iv. The probability of an event that cannot happen is _____.

        A. 0   **B.** 1

        C. $\dfrac{1}{2}$ **D.** 100

    v. The probability of a certain event is _____.

        A. 0   **B.** 1

        C. $\dfrac{1}{2}$ **D.** 100

2. Find mean, median, and mode for the following data.

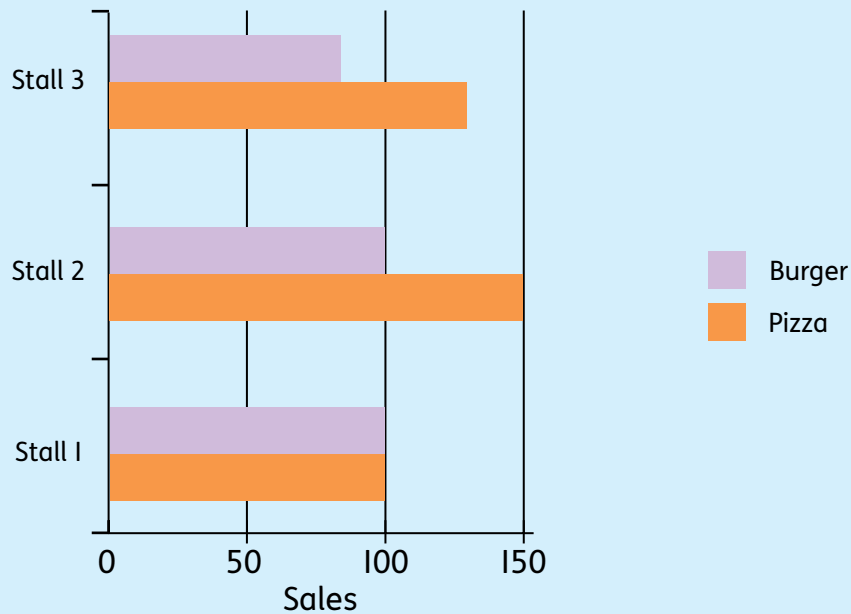| **a.** 12, 3, 7, 8, 2, 5, 1, 0, 2, 10	**b.** 100, 300, 700, 800, 200, 200, 200, 300

c. 5.0, 2.5, 6.I, 3.0, 5.6, 3.0, 0.2

d. −5, 0, −3, 2, 0, 5, −2, 3, 0

e. Rs 260, Rs 300, Rs 240, Rs 240

f. 20 m, 50 m, 30 m, I0 m, 50 m, 30 m, 20 m, 30 m, 30 m, 30 m, I0 m, 40 m

3. The given graph shows the sale of burgers and pizzas offered by three stalls in a food festival. Answer the questions given below.

a. Which stall sold the fewest number of burgers?

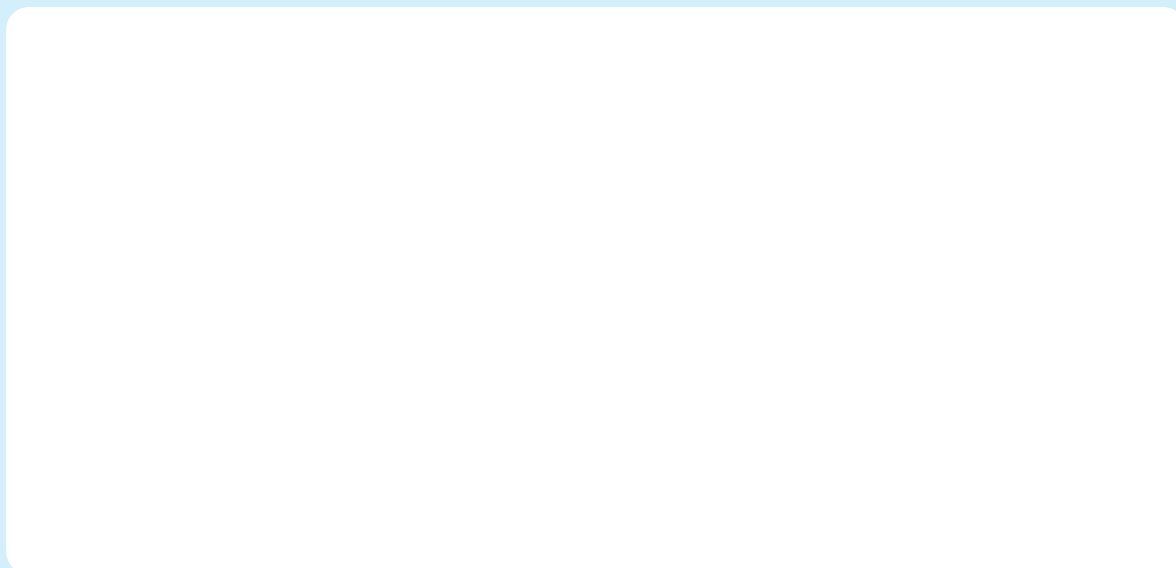**b.** Which stall sold the fewest number of pizzas?

c. Which stall sold the greatest number of burgers and pizzas altogether?

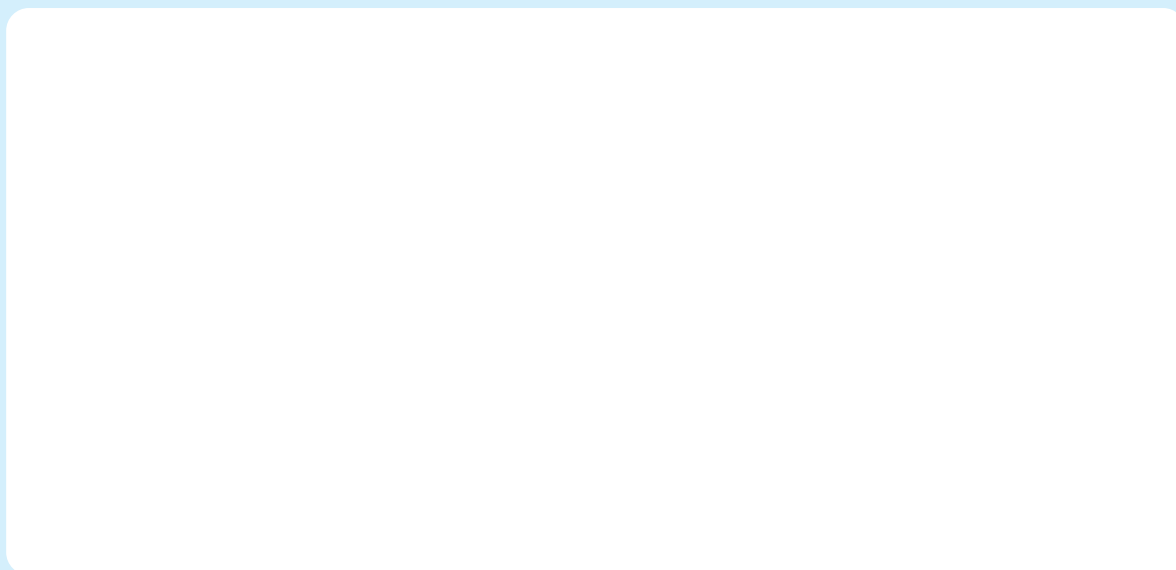**d.** What is the total number of pizzas sold by all three stalls?

4. Draw a horizontal multiple bar graph for the data given in the following table.

Number of visitors in a zoo during 4 days of a week

Day	Children	Men	Women
Thursday	40	15	5
Friday	35	10	10
Saturday	50	20	15
Sunday	55	25	25

5. Represent the data given in question 4 using vertical multiple bar graph.

6. The table shows the marks obtained by 4 students in three subjects. Construct a multiple bar graph to represent the data.

Student	English	Maths	Science
Bilal	12	20	16
Maria	16	18	15
Kanwal	14	18	13
Sabir	12	11	13

7. The household monthly expenses of Sarwat are represented using the given pie chart.

Answer the following questions if the total expenditure is Rs 50,000.

a. How much money is spent on utilities?

b. How much total money is spent on food and taxes?

c. For what purpose is the most money spent?

Rent 25%
Others 18%
Taxes 20%
Utilities 15%
Food 22%