RISHIKUL SANATAN COLLEGE

DEPARTMENT OF MATHEMATICS & PHYSICS

YEAR 9 MATHEMATICS

WORKSHEET 1: WEEK 1

STRAND 1: REVISION

Instructions:

Answer the following questions in the revision book.

1. **Rewrite** and **prove** each of the following expressions using the commutative and associative property.
   a. 9 + 5 b. (6 × 8) × 2

2. In a school of 800 students, $\frac{1}{10}$ of the students are involved in athletics.
   (a) How many students are involved in athletics?
   (b) How many students are not involved in athletics?

3. Work out the following decimals.
   a. 2.003 + 12. b. 3.67 – 1.009

4. The length and width of a rectangular piece of land are 22 m and 15m respectively.
   (a) Work out the perimeter of the piece of land.
   (b) Work out the area of the rectangular piece of land. Round your answer to 2 decimal places.

5. In a class of 40 students, $\frac{5}{8}$ of the students are boys. How many boys are there in this class?

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WORKSHEET 2: WEEK 2

STRAND 1: REVISION

1. Express in its simplest fraction.

(a) $\frac{7}{21}$ (b) $\frac{8}{40}$ (c) $\frac{24}{36}$ (d) $\frac{50}{75}$

2. Work out the value of p.

(a) $\frac{4}{5} = \frac{p}{15}$ (b) $\frac{2}{3} = \frac{6}{p}$ (c) $\frac{8}{40} = \frac{p}{120}$

3. Convert the following improper fractions to mixed numbers.

(a) $\frac{5}{4}$ (b) $\frac{6}{5}$ (c) $\frac{8}{3}$ (d) $\frac{9}{2}$

4. Convert the following mixed numbers to improper fractions.

(a) $2\frac{1}{3}$ (b) $4\frac{2}{5}$ (c) $5\frac{1}{2}$

(d) $1\frac{5}{6}$ (e) $5\frac{1}{6}$ (f) $2\frac{4}{7}$

5. Work out.

(a) $\frac{1}{4}$ of 10kg (b) $\frac{1}{3}$ of 12 metres

(c) $\frac{1}{6}$ of \$42.00 (d) $\frac{3}{4}$ of 8 hours

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WORKSHEET 3: WEEK 3

STRAND 2: DIRECTED NUMBERS

1. Use **directed** numbers to indicate the magnitude and direction of each of the following statements.

a. A boy moves 5m above the ground.
b. Philip jumps 15m down into the swimming pool.

2. Work out the following

a. $|4| - |-6|$
b. $|5| + |-9|$
c. $|-7| + |-11|$

3. Define and give examples for the following terms:
   a. Rational numbers
   b. Irrational numbers
   c. Integers
   d. Whole numbers
   e. Odd numbers
   f. Even numbers

4. Work out the following

(a) $-3 + 4 - 9$ (b) $2 - 6 - 4$ (c) $-20 \div 2 - 3$

5. Choose the inequality sign (<, >) to go in the box in order to make the mathematical statement true.

(a) 7 _____ -120 (b) −5 _____ −30

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WORKSHEET 4: WEEK 4

STRAND 3: ALGEBRA

1. Define each term and provide an example for each of the terms.
   a. Binomial
   b. Trinomial
   c. Monomial
   d. Polynomial

2. Define and give example for the following terms.
   a. Like term
   b. Unlike term

3. State the coefficient, power and variable from the given term.
   a. $3b^7$
   b. $\frac{3}{2}k^9$

4. Simplify the following expressions.

   a. 3y + 7y – 5y – 3y

   b. 2x2 − 5x2

5. Maciu bought three times more lollies than his cousin Epeli. The shopkeeper gave Maciu 4 more lollies as a gift. If Maciu had 22 lollies altogether, how many lollies did Epeli buy?

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WORKSHEET 5: WEEK 5

STRAND 3: ALGEBRA

1. Simplify the following expressions.
   a. $2a + 5a$ b. $7H^2 + 8H^2$ c. $15\ w^2 - 7w^2$

2. Simplify the following expressions.
   a. $(3x^4)^3$ b. $v^5 \div v^3$ c. $v^5 \times v^3$

3. Solve these equations.
   a. $y + 11 = 20$
   b. $-3 - y = 15$

4. Solve the following equations.
   a. $\frac{x+4}{6} = 0$ b. $3y + y - 4 = 4$

5 . Solve the following Inequations and show the solutions on number line.
   a. $2t - 1 < 5$ b. $q + 5 > 6$

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WORKSHEET 6: WEEK 6

STRAND 3: ALGEBRA

1. Simplify the following expressions.
   a. $2(x - 3)$
   b. $-(5 - 4x)$
   c. $\frac{3}{2}x^2\ (-10x - 4)$

2. Simplify the following expressions.
   a. $3x^2 y \times (-2x^2 y^3)$
   b. $7u \times 3v$
   c. $24p^4 q^3 \div (2p^2q)^3$

3. Solve these equations.
   a. $5(x - 4) = 19$
   b. $-2(7 + x) = 3(1 - 2x)$

4. Solve the following Inequations.
   a. $3x > 9$
   b. $-4x < 12$
   c. $\frac{x-7}{3} = 2$

5. Ashish collected three times as much money as Vikash did in their school organised fundraising. If Vikash collected $80.00, how much money was collected by Ashish?

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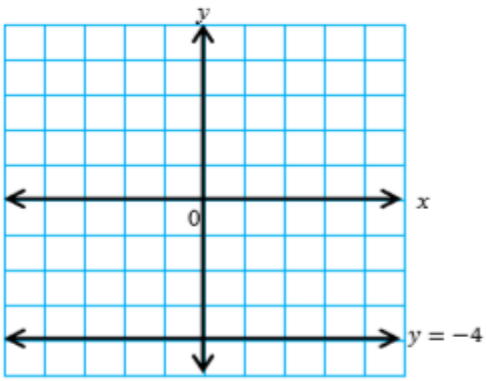
WORKSHEET 7: WEEK 7

STRAND 4: SIMPLE LINEAR EQUATION AND INEQUATION.

1. Sketch the graph of $x = -1$.

2. For the graph given below, find the coordinates of the y – intercept.

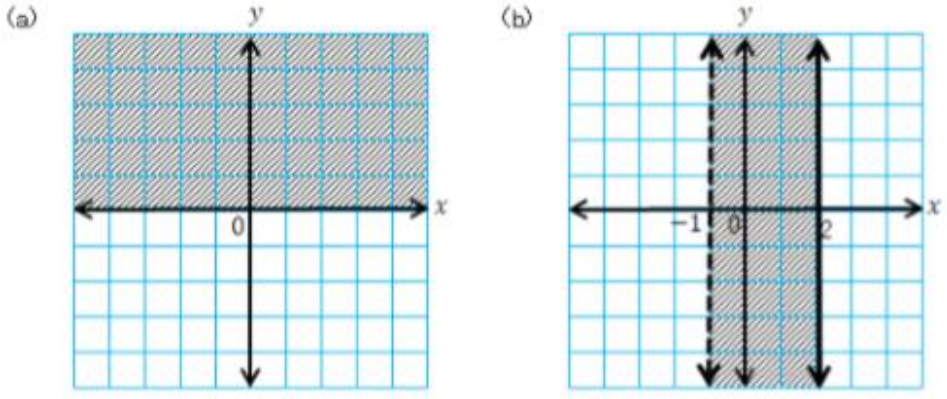


3. Draw the graph of a line parallel to the x – axis and passing through the point $(0,-2)$.

4. Sketch the graphs of the following functions on Cartesian plane.

   (a) $\{(x, y): y \geq 2\}$ (b) $\{(x, y): x \leq -1\}$

5. Express each of the following in set builder notation.



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WORKSHEET 8: WEEK 8

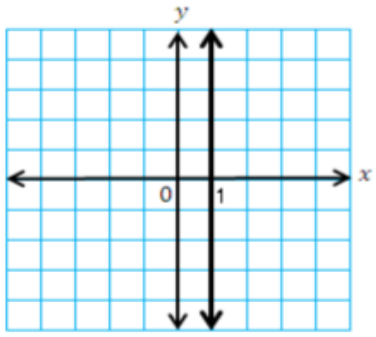
STRAND 4: SIMPLE LINEAR EQUATION AND INEQUATION.

1. State the difference between:
   a. Solid line and dashed line b. $\leq and <$

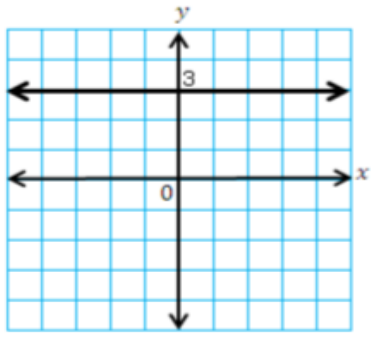
2. Sketch the graph of the following functions.
   a. y = −2 b. y = 3

3. Find the equation of each of the following graphs.

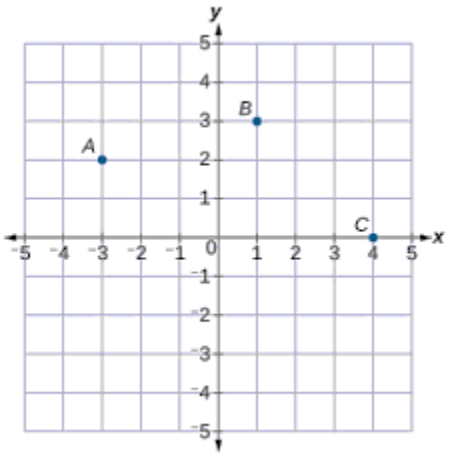
(a)



(b)



4. Write the coordinates of the points: A, B, C



A (___ , ___)

B (___ , ___)

C (___ , ___)

5. **Plot** and label clearly the following points on the Cartesian plane given.

i. $\boldsymbol{A(1,3)}$
ii. $\boldsymbol{B(-2,0)}$
iii. $\boldsymbol{C(-3,-1)}$
iv. $\boldsymbol{D(0,1)}$