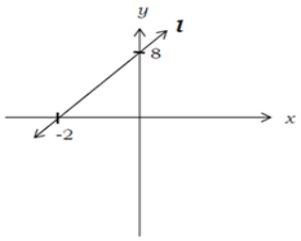
Rishikul Sanatan College

Year 10 Mathematics - Revision Worksheet

Strand 1 Functions - Week 1

Refer to the diagram given below to answer **Questions 1** and **2.**



1. The gradient of line l in the diagram above is

A. -4 C. $\frac{1}{4}$

B. $-\frac{1}{4}$ D. 4

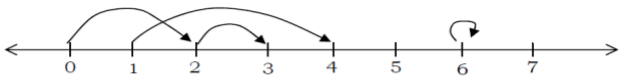
2. The equation of line l given above is

A. $y = \frac{x}{4} + 8$ C. $y = 4x + 8$

B. $y = -\frac{x}{4} + 8$ D. $y = -4x + 8$

3.

A relation is shown by the arrow diagram below.



(a) List the domain of the relation.

(b) List the range of the relation.

(c) Show the relation on the diagram given

(d) Is the relation shown above a function ?

4.

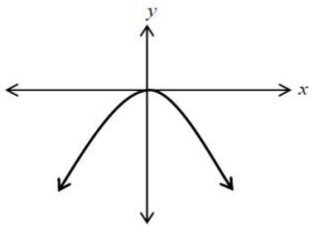
A function f is given as $f(x) = x^2 + 1$. Which of the following is an ordered pair of $f(x)$?

A. (1, 3) C. (3, 7)

B. (2, 5) D. (4, 9)

5.

The graph of $y = -x^2$ is given below.



(i) Name the type of function shown above.

(ii) Give the coordinates of the y – intercept of the graph.

Strand 1 Functions

Week 2

1.

A _____ is a set of ordered pairs in which each x – element has only one y – element associated with it.

A. range C. function

B. domain. D. non-function

2.

A quadratic function is given as $y = x^2$, where $x \in \{-2, -1, 0, 1, 2\}$.

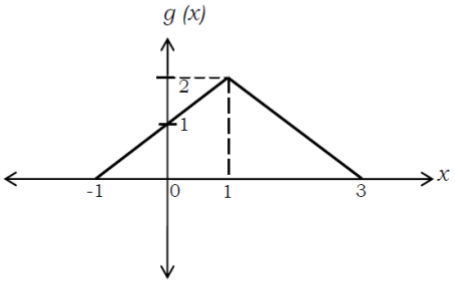
(a) Complete the table given below:

x	y
-2	4
-1	1
0	0
1	
2	

(b) Use the table above to sketch the graph of $y = x^2$.

3.

The graph of a relation, $g(x)$ is given below:



(i) What is the value of $g(0)$?

(ii) Solve for x if $g(x) = 0$.

(iii) What is the range of the relation, $g(x)$?

4.

A relation is given as $y = 3 - 2x$, where $x \in \{-1, 0\}$.

(i) List the ordered pairs of this relation.

(ii) Is the relation a function? Give a reason for your answer.

5.

On the pair of axes

(a) Draw the graph of $y = -2x - 2$ showing the x and y intercepts.

(b) Shade the region $y \geq -2x - 2$.

Strand 2 Algebra

Week 3

Factorisation and simplification of algebraic expression

1.

Factorise completely:

(i) $9 - x^2$

(ii) $12x - 36$

2.

(a) Factorise $x^2 + 3x + 2x + 6$, completely.

(b) Expand and simplify P + 2(P + 3)

3.

Factorise the following:

(i) $3f + 6f^2$

(ii) $x^2 + 6x + 9$

4.

Simplify the following.

(i) $\frac{3}{x} - \frac{2x}{x^2}$

(ii) $4(x + 1) - 3(x + 1)$

5.

Simplify the following.

(i) $\frac{x}{x^2 - x}$

(ii) $\frac{3x(x-2)}{9x}$

Strand 2 Algebra

Week 4

Solving Equations and In Equations

1.

Peter has to divide \$80 amongst his three children: George, Anselom and Francis. George will have twice as much as Francis, and Anselom will have \$10 less than Francis.

(i) Write an equation to represent the above information if Francis gets x dollars.

(ii) How much will Francis get?

2.

Abdul has \$17 more than his friend John. They have a total of \$29 with them.

(i) Write a **mathematical equation** for the above information. Let x represent John's share of money. [*Do not solve the equation*]

(ii) How much money does John have?

3.

Solve the inequality given below.

$$\frac{-2x - 1}{5} < -3$$

4.

Solve $(p - 2)^2 = 16$

5.

Solve $2(x - 1) = 4(x + 2)$

Strand 2 Algebra

Week 5

Formula Manipulation

1.

A formula is given as $K = \frac{1}{2}mv^2$

(a) Make v the subject of the formula.

(b) Find the value of v if K = 100 and m = 8.

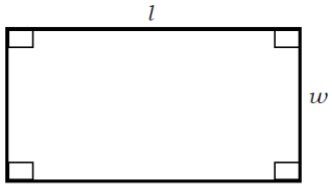
2.

A formula is given as $p = ax + b$.

(a) Make 'a' the subject of the formula.

(b) Find the value of a if p = 100, b = 10 and $x = 9$.

3.



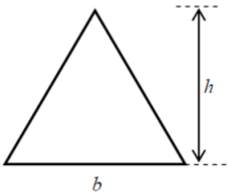
The perimeter of the above rectangle is given by the formula $P = 2(l + w)$.

(i) Make l the subject of the formula.

(ii) Calculate the length, l, of the rectangle if P = 45 cm and $w = 10.5$ cm.

4.

The area of the triangle below is given by the formula $A = \frac{1}{2}bh$

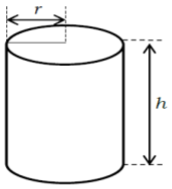


(i) Make h the subject of the formula.

(ii) Calculate the height, h, of the triangle if $A = 20$ cm^2 and $b = 5$ cm.

5.

The volume of the cylinder below is given by the formula $V = \pi r^2 h$



(i) Make r the subject of the formula.

(ii) Calculate the radius, r, of the cylinder if $V = 100$ cm^3 and $h = 7$ cm.

Strand 3 Numbers

Week 6

1.

The value of $(2^{-1})^{-2}$ is the same as

A. -4 C. $\frac{1}{4}$

B. $-\frac{1}{4}$ D. 4

2.

$7x^0 - 1$ can be simplified to

A. 0 C. $6x$

B. 6 D. $7x - 1$

3.

The expression $\left(\frac{1}{3}\right)^2$ can be simplified to

A. 9 B. $\frac{1}{9}$

C. $-\frac{1}{9}$ D. -9

4.

Simplify:

(i) $(2p^3)^2$

(ii) $27b^3 \div 3b$

5.

Simplify the following expressions.

(a) $\dfrac{(3x^2y)^3 \times x^2y}{(3xy^2)^2}$

(b) $(2y)^0 + x^0 - 7x^0$

Strand 4 Geometry

Week 7

Pythagoras Theorem

1.

The value of $(\sin 30^\circ + \tan 45^\circ)$ equals

A. 0.5 B. 1.0

C. 1.5 D. 2.0

2.

The longest side of a right-angled triangle is called

A. pythagorean B. hypotenuse

C. adjacent D. opposite

3.

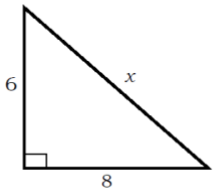
A ship sailed 9km east from Port A and then 12km south to Port B.

(a) What is the shortest distance from Port A to Port B?

(b) Port C is 4km on the west of Port B. Find the distance between Port A and Port C.

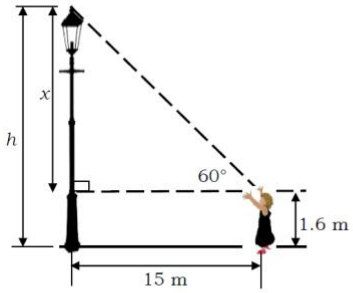
4.

For the right angled triangle shown below, find the value of length x.



5.

Loata is 1.6 m tall and she is standing 15 m away from the base of a lamp post. She sees the top of the lamp post at an angle of elevation of 60°.



(i) Write an expression for length x in terms of the angle of elevation.

(ii) Hence, calculate the height (h) of the lamp post.

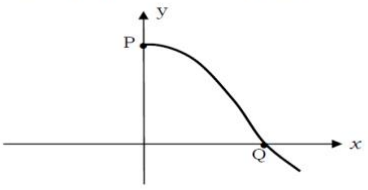
Strand 4 Geometry

Week 8

Trigonometric Functions

1.

A part of the graph, y = Cos x graph is given below.

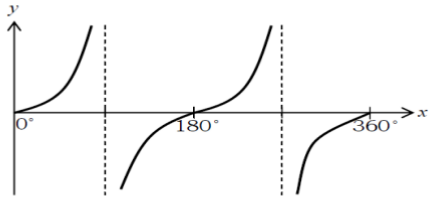


(i) Write down the coordinates of point Q.

(ii) State the x value for which graph, y = Cos x reaches its lowest (minimum) point for $0 \leq x \leq 360°$.

2.

The trigonometric graph shown below has the equation:

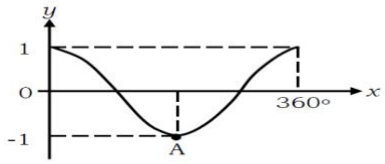


A. $y = -\tan x$ C. $y = \sin x$

B. $y = \tan x$ D. $y = \cos x$

3.

A trigonometric graph is given below:

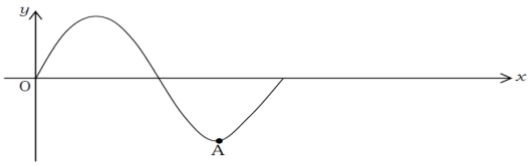


(a) Find the coordinates of point A.

(b) Give the equation of the graph.

4.

The diagram given below shows the graph of y = Sin x.



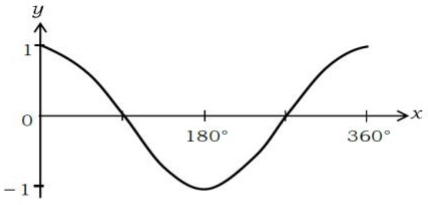
The coordinates of point A in the graph above is

A. (-1, 270) C. (270, -1)

B. (-1, 360) D. (360, -1)

5.

The trigonometric graph shown below has the equation



A. $y = \sin x$ C. $y = -\cos x$

B. $y = \tan x$ D. $y = \cos x$