



DEPARTMENT OF MATHEMATICS

S2 HOLIDAY WORK

SET 2

RELATIONS AND MAPPINGS

1. a.) Draw arrow diagrams for the following ordered pairs.
 - (i.) $\{(5,5), (6,6), (7,7), (8,8)\}$
 - (ii.) $\{(1,-2), (2,-2), (3,-3), (4,-5), (5,-5)\}$
 - (iii.) $\{(2,1), (4,3), (6,5), (8,7)\}$b.) Write the domain and range in each of the following;
c.) Which of the relations above represent functions and which ones do not?
2. A relation is defined as $f(x) = \sqrt{x}$
 - a.) Write the range of the relation given the domain $\{1,4,9,16,25\}$
 - b.) Draw a graph for the relation.
 - c.) Is the relation a function? Justify your answer.
3. Use a papygram on the set $M=\{1,2,3,4,5,6,7,8,9,10\}$ to illustrate the relation "is twice as".
4. A relation "is a third of" is from set $A=\{1,4,6\}$ to the set $B=\{2,4,5,3,12\}$, use an arrow diagram to illustrate this relation.
5. Illustrate the relation "is a factor of" on the sets $M=\{2,4,5,6\}$ and $N=\{4,8,10,15\}$
6. a.) A relation "is less than" acts on the set $A=\{1,5,6,4,2\}$, use a papygram to illustrate this relation.
b.) Find the domain of this relation.
c.) Find the range of the relation.

7. A relation is defined by $\{(x, y): x \in A \text{ and } y \in B, \text{ where } y = 3x\}$
 $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6, 9\}$, find the;
 a.) Domain
 b.) Range
8. By using the mapping f such that $x \rightarrow 4x - 1$ on domain $\{4, 2, 3\}$, find the range of f
9. If $f(x) = \frac{1}{3}x$, find; $f(-1), f(2), f(3), f(-2)$
10. The relation f is defined by $x \rightarrow x^2 + 3$. By using the domain $D = \{-2, -1, 0, 1, 2, 3\}$
 a.) Find the range of f on D
 b.) Show your answer on an arrow diagram.
 c.) What type of mapping is this?
11. The range corresponding to the mapping $x \rightarrow x + 2$ is $\{2, 3, 5, 6\}$. Find the domain
12. Given the functions; $f(x) = \frac{1-2x}{x+1}$, $g(x) = \frac{x+3}{2}$ and $h(x) = \frac{5x}{4} - 1$
 a.) Find the value of;
 (i.) $f(-2)$
 (ii.) $g(-1)$
 b.) Find the value of x for which;
 (i.) $f(0) = g(x)$
 (ii.) $g(x) = 0$
 (iii.) $g(x) = h(x)$
13. a.) Given that set $P = \{2, 3, 4, 6, 12\}$, draw a papygram on set P showing the relation "is a multiple of"
 b.) Given the functions $f(x) = \frac{2x+1}{3}$ and $g(x) = \frac{x-1}{2}$, find;
 (i.) $f(1)$
 (ii.) $g(1)$
 (iii.) the value of x for which $f(x) + g(x) = 3\frac{1}{6}$

END