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RELATION AND FUNCTION WORKSHEET

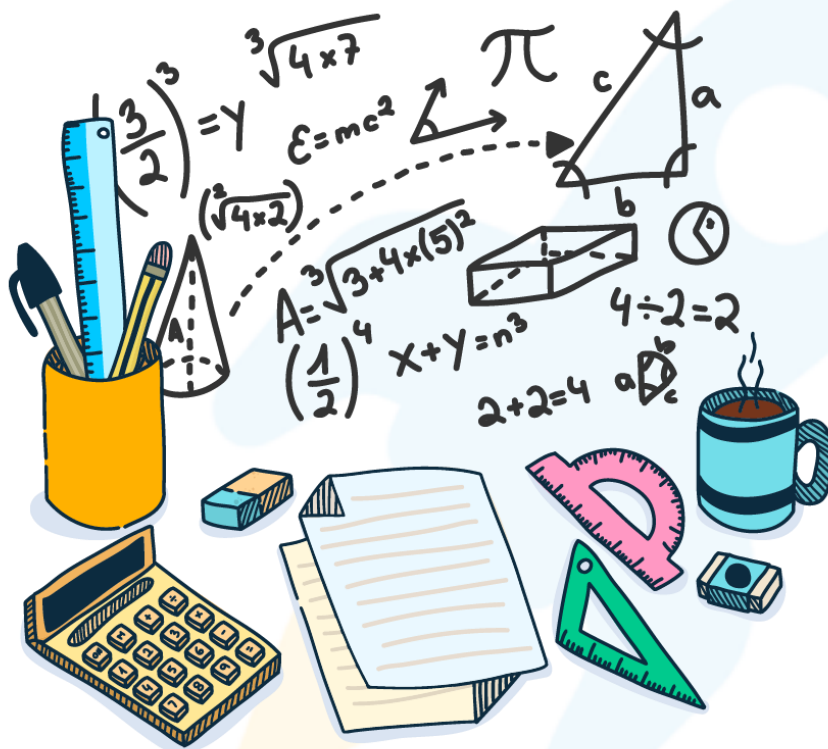
1. If $A = \{1, 2, 3, 4, 5\}$ and $B = \{a, b, c\}$, then

$$n(B \times A) =$$

- (a) 5 (b) 3 (c) 15 (d) 125

2. The relation "daughter of" is a _____ relationship.

- (a) Reflexive (b) symmetric (c) transitive (d) none



If $A = \{1, 2, 3\}$ and $B = \{a, b, c\}$, $f = \{(1, a), (1, b), (1, c)\}$, $g = \{(1, a), (3, c), (2, b)\}$, $h = \{(1, a), (2, b), (3, a)\}$, $q = \{(1, a), (2, a), (3, b), (1, b), (3, a)\}$ then

3. Which of the above is one to one relation?

- (a) f (b) g (c) h (d) q

4. Which of the above is one to many relation?

- (a) f (b) g (c) h (d) q

5. Which of the above is many to one relation?

- (a) f (b) g (c) h (d) q

6. If $f(x) = ax^2 + b^2$ and $f = \{(1, 7), (2, 16), (3, 31)\}$ then the value of a, b are _____ .
(a) 2, -1 (b) -2, 1 (c) 3, -1 (d) -2, -1

7. If f from $\mathbb{R} \times \mathbb{R}$ defined by $f(x) = x^2 + 1$, then
 $f^{-1}\{5, 17, 26\} =$
(a) $\{-1, 1, 2\}$ (b) $\{0, 1, 2\}$ (c) $\{\underline{2}, 4, 5\}$
(d) $\{0, \underline{\pm 2}\}$

8. Given $f(x) = \sqrt{x^2 + 1}$ and $g(x) = 1/x$, then
 $(f \circ g)(x) =$ _____ .

9. If $f(x) = 5x - 2$, $g(x) = 2x - 3$ then $(f \circ g)(x) =$ _____ .

10. A function f is given by $f(x) = (x - 2)/5$ then
 $f^{-1}(x) =$ _____ .

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- Kirk Riley

"I appreciate the effort that miss Nitya puts in to help my daughter understand the best methods and to explain why she got a problem incorrect. She is extremely patient and generous with Miranda."

- Barbara Cabrera

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**ANSWERS**

1)	(c) 15
2)	(c) transitive
3)	(b) g
4)	(a) f
5)	(d) q
6)	3, 2

7)	(c) $\{\underline{2}, 4, 5\}$
8)	$\sqrt{(x^2 + 1) / x}$
9)	$10x - 17$
10)	$5x + 2$