F.IF.A.2: Domain and Range 1

1 What is the domain of the relation shown below?

$\{(4,2),(1,1),(0,0),(1,-1),(4,-2)\}$

1) $\{0,1,4\}$
2) $\{-2,-1,0,1,2\}$
3) $\{-2,-1,0,1,2,4\}$
4) $\{-2,-1,0,0,1,1,1,2,4,4\}$

2 Let f be a function such that $f(x) = 2x - 4$ is defined on the domain $2 \le x \le 6$. The range of this function is

1) $0 \le y \le 8$
2) $0 \le y < \infty$
3) $2 \le y \le 6$
4) $-\infty < y < \infty$

3 If the function $f(x) = x^2$ has the domain $\{0,1,4,9\}$, what is its range?

1) $\{0,1,2,3\}$
2) $\{0,1,16,81\}$
3) $\{0,-1,1,-2,2,-3,3\}$
4) $\{0,-1,1,-16,16,-81,81\}$

4 If the domain of the function $f(x) = 2x^2 - 8$ is $\{-2,3,5\}$, then the range is

1) $\{-16,4,92\}$
2) $\{-16,10,42\}$
3) $\{0,10,42\}$
4) $\{0,4,92\}$

5 The function $f(x) = 2x^2 + 6x - 12$ has a domain consisting of the integers from -2 to 1, inclusive. Which set represents the corresponding range values for $f(x)$?

1) $\{-32,-20,-12,-4\}$
2) $\{-16,-12,-4\}$
3) $\{-32,-4\}$
4) $\{-16,-4\}$

6 If $f(x) = \frac{1}{3}x + 9$, which statement is always true?

1) $f(x) < 0$
2) $f(x) > 0$
3) If $x < 0$, then $f(x) < 0$.
4) If $x > 0$, then $f(x) > 0$.

7 The range of the function $f(x) = |x + 3| - 5$ is

1) $[-5,\infty)$
2) $(-5,\infty)$
3) $[3,\infty)$
4) $(3,\infty)$

8 If $f(x) = x^2 + 2$, which interval describes the range of this function?
1) $(-\infty, \infty)$
2) $[0, \infty)$
3) $[2, \infty)$
4) $(-\infty, 2]$

9 What is the range of the function $f(x) = (x-4)^2 + 1$?
1) $x > 4$
2) $x \geq 4$
3) $f(x) > 1$
4) $f(x) \geq 1$

10 The domain of the function $f(x) = x^2 + x - 12$ is
1) $(-\infty, -4]$
2) $(-\infty, \infty)$
3) $[-4, 3]$
4) $[3, \infty)$

11 The range of $f(x) = x^2 + 2x - 5$ is the set of all real numbers
1) less than or equal to -6
2) greater than or equal to -6
3) less than or equal to -1
4) greater than or equal to -1

12 The range of the function $f(x) = x^2 + 2x - 8$ is all real numbers
1) less than or equal to -9
2) greater than or equal to -9
3) less than or equal to -1
4) greater than or equal to -1

13 Which interval represents the range of the function $h(x) = 2x^2 - 2x - 4$?
1) $(0.5, \infty)$
2) $(-4.5, \infty)$
3) $[0.5, \infty)$
4) $[-4.5, \infty)$

14 The range of the function defined as $y = 5^x$ is
1) $y < 0$
2) $y > 0$
3) $y \leq 0$
4) $y \geq 0$

15 Which function has a domain of all real numbers and a range greater than or equal to three?
1) $f(x) = -x + 3$
2) $g(x) = x^2 + 3$
3) $h(x) = 3^x$
4) $m(x) = |x + 3|$

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Answer Section

1 ANS: 1 REF: 081710ai
2 ANS: 1
$f(2) = 0$

$f(6) = 8$

REF: 081411ai
3 ANS: 2 REF: 081806ai
4 ANS: 3
$f(-2) = 0,\ f(3) = 10,\ f(5) = 42$

REF: 011812ai
5 ANS: 2
$f(-2) = f(-1) = -16,\ f(0) = -12,\ f(1) = -4$

REF: 011914ai
6 ANS: 4
$\frac{1}{3}$ of a positive number +9 is a positive number.

REF: 061417ai
7 ANS: 1 REF: 012018ai
8 ANS: 3 REF: 061816ai
9 ANS: 4
Vertex $(4, 1)$

REF: 012424ai
10 ANS: 2 REF: 062320ai
11 ANS: 2
$x = \frac{-2}{2(1)} = -1;\ \ f(-1) = (-1)^2 + 2(-1) - 5 = -6$

REF: 082316ai
12 ANS: 2
$f(x) = x^2 + 2x - 8 = x^2 + 2x + 1 - 9 = (x+1)^2 - 9$

REF: 061611ai
13 ANS: 4
$x = \frac{-(-2)}{2(2)} = 0.5\ \ h(0.5) = -4.5$

REF: 081923ai
14 ANS: 2 REF: 011619ai

15 ANS: 2
All four functions have a real domain. f has a real range. h has a positive real range. m has a nonnegative real range.

REF: 062424ai