MATH PLACEMENT SAMPLE QUESTIONS - ALGEBRA

Each multiple choice question has only one correct answer. The actual test will have 20 similar questions to the examples given here.

1. Which is the solution set of $\sqrt{a-1}-2=2$?

(a) $\{17\}$

(b) $\{1\}$

(c) $\emptyset$

(d) $\{17, 0\}$

2. What is the slope of the straight line $2y+7x=2$?

(a) 7

(b) $\frac{7}{2}$

(c) $-\frac{7}{2}$

(d) -7

3. Simplify the expression $\dfrac{|10(-2)|-|1-2|}{-54}$

(a) $\dfrac{19}{54}$

(b) $-\dfrac{19}{54}$

(c) $\dfrac{7}{18}$

(d) $-\dfrac{7}{18}$

4. Solve the equation $\dfrac{x+8}{2}+\dfrac{x-2}{5}=\dfrac{43}{10}$.

(a) 43

(b) $\frac{37}{2}$

(c) 0

(d) 1

5. Which interval is the solution to the compound inequality $6x - 4 < 2x$ or $-3x \leq -9$?

(a) $(1, 3]$

(b) $(-\infty, 3]$

(c) $\emptyset$

(d) $(-\infty, 1) \cup [3, \infty)$

6. Solve the absolute value equation $|5x + 4| + 10 = 8$.

(a) Either $x = -\frac{1}{2}$ or $x = -\frac{3}{2}$.

(b) There are no solutions.

(c) Either $x = -\frac{2}{5}$ or $x = -\frac{6}{5}$.

(d) Either $x = \frac{2}{5}$ or $x = \frac{6}{5}$.

7. How many litres of a solution with 20% acid must be added to 40 litres of a solution with 50% acid to obtain a solution of 30% acid?

(a) 20 litres

(b) 40 litres

(c) 80 litres

(d) 200 litres

8. Solve the system of equations $\begin{cases} x - 5y = 5 \\ -5x - 4y = -25 \end{cases}$.

(a) $(5, 0)$

(b) There is no solution.

(c) $(6, 5)$

(d) $(-5, -1)$

9. Write the following fraction using only positive exponents: $\dfrac{x^{-11}y^8}{x^{-5}y^{-2}}$

(a) x^6y^{10}

(b) $\frac{y^{10}}{x^6}$

(c) $\frac{x^6}{y^6}$

(d) $\frac{1}{y^6x^6}$

10. Factor the polynomial $3x^2 + 11x - 4$ completely.

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

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

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

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

11. Simplify the expression as much as possible: $\dfrac{x^2 - 8x + xy - 8y}{6x^2 - 6y^2} \div \dfrac{x - 8}{11x - 11y}$

(a) 1

(b) $\frac{11}{6}$

(c) $\frac{11(x-y)}{6(x+y)}$

(d) $\frac{(x-8)^2}{66(x-y)^2}$

12. Solve the equation $\dfrac{x + 6}{x^2 - 4x - 5} - \dfrac{6}{x^2 + 2x + 1} = \dfrac{x - 6}{x^2 - 4x - 5}$.

(a) $x = -42$

(b) $x = -7$

(c) $x = 7$

(d) $x = -66$

13. The difference between two numbers is 12. Three times the smaller number is twice the larger number. What is the smaller number?

(a) 48

(b) 36

(c) 24

(d) 12

14. Divide $(5x^2 - 6x - 27) \div (x - 3)$.

(a) $x - 6$

(b) $5x - 9$

(c) $5x^2 + 6$

(d) $5x + 9$

15. Suppose that k, q are positive numbers. Simplify the radical expression $\sqrt{48k^7q^8}$.

(a) $4k^3q^4\sqrt{3}$

(b) $4q^4\sqrt{3k^7}$

(c) $4k^3q^4\sqrt{3k}$

(d) $4k^7q^8\sqrt{3k}$

16. Multiply and simplify as much as possible: $(4+\sqrt[3]{2})(4-\sqrt[3]{2})$.

(a) 14

(b) 12

(c) $16-\sqrt[3]{4}$

(d) $16-\sqrt[3]{2}$

17. Solve the inequality $(x+6)(x-4)>0$

(a) $(-\infty,-6)\cup(4,\infty)$

(b) $(-6,4)$

(c) $(-\infty,-6]\cup[4,\infty)$

(d) $[-6,4]$

18. Solve the equation $\sqrt{3x+1}=3+\sqrt{x-4}$.

(a) There are no solutions.

(b) Either $x=5$ or $x=8$.

(c) Either $x=-5$ or $x=-8$.

(d) Either $x=4$ or $x=10$.

19. What is the solution set of $2x^2=-8x-3$?

(a) $\{-2+\sqrt{10},-2-\sqrt{10}\}$

(b) $\left\{\frac{-4+\sqrt{10}}{2},\frac{-4-\sqrt{10}}{2}\right\}$

(c) $\left\{\frac{-4+\sqrt{22}}{2},\frac{-4-\sqrt{22}}{2}\right\}$

(d) $\left\{\frac{-8+\sqrt{10}}{2},\frac{-8-\sqrt{10}}{2}\right\}$

20. Factor the polynomial $xy + 11x - 7y - 77$ completely.

(a) $(x + 11)(y - 7)$

(b) $(x + 7)(y - 11)$

(c) $(x - 11)(y + 7)$

(d) $(x - 7)(y + 11)$

ANSWER KEY

1. A
2. C
3. B
4. D
5. D
6. B
7. C
8. A
9. B
10. A
11. B
12. B
13. C
14. D
15. C
16. C
17. A
18. B
19. B
20. D