

Name: _____ Date: _____

PLEASE READ:

You must show all your work on your work paper.

Label the work with the number of the problem.

Circle the correct answer on this sheet.

ACCELERATED PRE-CALCULUS ENTRANCE EXAM - NON CALCULATOR

DIRECTIONS: You must show all your work on your work paper. Label the work with the number of the problem. Then circle the correct answer on this sheet.

1) Simplify $\frac{46}{115}$
a) $\frac{4}{11}$ b) $\frac{2}{3}$ c) $\frac{2}{5}$ d) $\frac{2}{23}$ e) none of these

2) Divide $4 \div \frac{8}{7}$
a) $\frac{32}{7}$ b) $\frac{7}{2}$ c) 2 d) $\frac{27}{8}$ e) none of these

3) What is 25% of 1630 to the nearest tenth?
a) 403 b) 415 c) 407.5 d) 40.75 e) none of these

4) Combine $(-3) - (-6)$
a) -9 b) 18 c) -3 d) 3 e) none of these

5) Evaluate $(-4)^4$
a) 256 b) -16 c) -256 d) 16 e) none of these

6) Simplify $-\frac{1}{6}(\frac{1}{2}) + \frac{3}{4} \div \frac{1}{12}$
a) 9 b) 8.91 c) $\frac{107}{12}$ d) $\frac{7}{2}$ e) none of these

7) Explain the concept of 30 ft^2 (30 square feet).

8) Solve for x : $3x - 8 = 7x + 6$

- a) $-\frac{7}{2}$ b) $\frac{1}{2}$ c) $\frac{7}{5}$ d) $-\frac{3}{4}$ e) none of these

9) Solve for x : $\frac{2}{5}x + \frac{1}{4} = \frac{1}{2}x$

- a) $-\frac{5}{4}$ b) $\frac{5}{2}$ c) $-\frac{3}{4}$ d) $\frac{5}{8}$ e) none of these

10) Solve for r : $I = Prt$

- a) $\frac{I}{Pr}$ b) PIt c) $\frac{Pt}{I}$ d) $\frac{I}{Pt}$ e) none of these

11) Solve: $-2x + 5 \leq 4 - x + 3$

- a) $x \geq -2$ b) $x \leq -2$ c) $x > -2$ d) $x < 3$ e) none of these

12) A rectangular storage room in the school has a perimeter of 88 feet. The length of the room is 11 feet longer than twice the width. Find the dimensions of the room.

- a) 11 feet and 33 feet b) 16.5 feet and 27.5 feet c) 38.5 feet and 49.5 feet
d) 4 feet and 22 feet e) none of these

13) Find the slope of the line $4x - 3y - 7 = 0$

- a) $\frac{7}{3}$ b) $\frac{4}{3}$ c) $-\frac{4}{3}$ d) $-\frac{3}{4}$ e) none of these

14) What is the circumference of a circle with diameter 20 yards?

- a) 2π yds b) 25π yds c) 40π yds d) 40π ft e) none of these

15) Find the value $f(-2)$ for the function $f(x) = 3x - 7$

- a) 13 b) -1 c) $x = -9$ d) -13 e) none of these

16) Find the solution for the following system of equations:

$$5x - 2y = 27$$

$$3x - 5y = -18$$

a) $(-9, 7)$ b) $(-9, 9)$ c) $(9, 9)$ d) $(7, -3)$ e) none of these

17) Simplify $(-3x^3y^2)^3(4x^3y^5)^0$

a) $-27x^9y^6$ b) $-27x^6y^6$ c) $27x^9y^6$ d) $-27x^9y^5$ e) None of these

18) Combine: $(2x^3 - 3x^2 + 7x) - (4x^3 - 7x + 12)$

a) $2x^3 + 3x^2 - 14x - 12$ b) $-2x^3 + 3x^2 + 14x + 12$ c) $-2x^3 - 3x^2 + 14x - 12$
d) $-2x^3 - 3x^2 - 12$ e) none of these

19) Multiply. $(7x - 4y)^2$

a) $25x^2 - 30xy + 9y^2$ b) $49x^2 - 16y^2$ c) $49x^2 - 56xy + 16y^2$
d) $49x^2 + 56xy + 16y^2$ e) none of these

20) Factor the greatest common factor: $6x^2y^2 - 9xy + 15xy^2$

a) $3xy(2xy + 3 - 5y)$ b) $2(x - 3y + 6y^2)$ c) $3xy(2xy - 3 + 5y)$
d) $2xy(x - 6x + 12xy)$ e) none of these

21) Factor $x^2 - 22x - 48$

a) $(x + 24)(x + 2)$ b) $(x + 2)(x - 24)$ c) $(x + 24)(x - 2)$
d) $(x - 12)(x + 4)$ e) none of these

22) What is the volume of a rectangle solid with length 7 feet, width 3 feet and height 2 feet?

a) 42 meters³ b) 35 ft³ c) 42 yd³ d) 42 ft³ e) none of these options

23) Simplify $\frac{x^2 - x - 6}{2x^2 + 7x + 6}$

a) $\frac{x+2}{2x+3}$ b) $\frac{x-3}{2x+3}$ c) $\frac{x-1}{2x+7}$ d) $\frac{x+3}{2x-3}$ e) none of these

24) Simplify $\frac{3y+1}{y+2} + \frac{5}{y+2}$

a) $\frac{3x+1}{2y+4}$ b) $\frac{3y+3}{y+4}$ c) 5 d) 3 e) none of these

25) Solve for x and round to the nearest thousandths for $\frac{5}{x} = \frac{7}{13}$.

a) 9.2 b) 9.2857 c) 9.286 d) 9.28571 e) none of these

26) Evaluate $\sqrt{225} + \sqrt[3]{-64}$

- a) -11 b) 10 c) 11 d) 13 e) none of these

27) Given $|3x + 6| = 24$, determine the solution(s) for x:

- a) -6 b) -10 c) -6 and 10 d) 6 and -10 e) none of these

28) Solve the following by the **Square Root Property**: $2x^2 + 3 = 39$

- a) $-3\sqrt{2}$ & $3\sqrt{2}$ b) $-3\sqrt{2}$ c) $3\sqrt{2}$ d) $-2\sqrt{3}$ & $2\sqrt{3}$ e) none of these

29) Solve by the quadratic formula: $8x^2 - 2x - 7 = 0$

- a) $\frac{1 \pm \sqrt{57}}{4}$ b) $\frac{1 \pm \sqrt{57}}{3}$ c) $\frac{1 \pm \sqrt{57}}{8}$ d) $\frac{1 \pm \sqrt{57}}{7}$ e) none of these

30) Determine $\sqrt[3]{-32}$

- a) -2 b) -3 c) -5 d) 6 e) none of these

31) **OPEN ENDED**: Solve the following by completing the square: $2x^2 + 12x - 18 = 0$.
SHOW ALL YOUR STEPS!

32) Explain to me what $\sqrt[3]{81}$ is asking you. I am not asking for the answer to $\sqrt[3]{81}$, I am asking you for the meaning of $\sqrt[3]{81}$.

33) Determine all the solutions to $x^2 = 81$

- a) 9 b) 3 c) -9 d) 4 e) none of these

34) Factor $6x^2 + 17x - 14$.

- a) $(2x - 7)(3x - 2)$ b) $(2x + 7)(3x - 2)$ c) $(2x - 7)(3x - 2)$
d) $(2x + 7)(3x + 2)$ e) none of these

35) Find the distance between the following two points: (3, 4) (-6, 20). Give your answer as an exact value.

- a) $\sqrt{256}$ b) 81 c) $\sqrt{337}$ d) 337 e) none of these

36) Solve the following $\frac{2x^2 - 5x}{3x - 7} = \frac{3}{2}$.

- a) $-\frac{7}{4} : 3$ b) $-\frac{7}{4} : -3$ c) $\frac{7}{4} : -3$ d) $\frac{7}{4} : 3$ e) none of these

- 37) Distribute then combine like terms: $2y(x^2 + y^2) - 3(x^2y - 5y^2)$
a) $5x^2y + 2y^3 + 15y^2$ b) $-5x^2y + 2y^3 - 15y^2$ c) $5x^2y - 13y^2$ d) $5x^2y + 2y^3 - 15y^2$ e) none of these

- 38) Explain the concept of 30 ft^3 (30 cubic feet).

- 39) What is the area of a rectangle with length 30 meters and width 20 meters?

- a) 600 meters b) 500 meters² c) 500 meters
d) 600 meters² e) none of these options

- 40) Solve for the roots of the following equation: $2x^2 + x - 3 = 0$.

- a) $(\frac{3}{2}, 1)$ b) $-1 : -\frac{3}{2}$ c) $(x - 24)(x + 2)$ d) $1 : -\frac{3}{2}$ e) none of these

- 41) What is the area of a circle with radius 10 inches?

- a) 100 in^3 b) $100\pi \text{ in}^2$ b) $100\pi \text{ in}^3$ b) $1000\pi \text{ in}^3$ e) none of these options

- 42) Find the equation of the line that passes through $(-1, 6)$ and $(2, 3)$

- a) $y = 9x - 4$ b) $y = -x + 5$ c) $y = x + 5$ d) $y = x - 5$ e) none of these

- 43) Simplify the following algebraic fractions: $\frac{x+2}{x^2+5x+6} + \frac{2x}{x+2}$.

- a) $\frac{2x^2-7x+2}{x^2+5x+6}$ b) $\frac{-2x^2-7x+2}{x^2+5x+6}$ c) $\frac{2x^2+7x+2}{x^2+5x+6}$ d) $\frac{2x^2-7x+2}{x^2+5x+6}$ e) none of these

- 44) If $f(x) = 7x + 12$, determine x if $f(x) = 40$.

- a) $x = 5$ b) $x = 4$ c) $x = -6$ d) $x = -4$ e) none of these

45) OPEN ENDED: Explain how integers and rational numbers are different.

46) Solve $\sqrt{3x+4} + 2 = x$

a) 0 b) 6 c) 4 d) 7 e) none of these

d) $x = -10$ and $x = 6$ e) none of these

47) Given $|3x + 6| \leq 24$, determine the solution(s) for x:

a) $-6 \leq x \leq 10$ b) $-10 \leq x \leq -6$ c) $-10 \leq x \leq 6$ d) none of these

48) Given $\sqrt{2x+3} = 1 + \sqrt{x+2}$ determine the two potential solutions.

a) $3 \pm 2\sqrt{3}$ b) $2 \pm 2\sqrt{3}$ c) $2 \pm 2\sqrt{5}$ d) $4 \pm 2\sqrt{3}$ e) none of these

49) Given the set of ordered pairs $(-5, 11)$ and $(-18, 27)$ determine the **Average Rate of Change**.

a) $\frac{15}{7}$ b) $\frac{16}{13}$ c) $\frac{15}{9}$ d) $-\frac{16}{13}$ e) none of these

50) Simplify $\frac{x^2 + 2x - 15}{x^2 + 9x + 20}$

a) 0 b) $\frac{x+3}{x+4}$ c) $\frac{x+3}{x-4}$ d) $\frac{x-3}{x+4}$ e) none of these

51) Find the equation of the line going through the point $(2, 7)$ and perpendicular to the line $12x + 6y + 24 = 0$.

a) $y = \frac{1}{3}x + 7$ b) $y = \frac{1}{2}x + 6$ c) $y = \frac{1}{2}x - 6$ d) $y = -\frac{1}{2}x + 6$ e) none of these