

Algebra Challenge Pre-Test-May version

50 questions – 60 minutes

Multiple Choice

Use the answer “NOTA” (which stands for None Of The Above) if the answer is not listed

- Which of the following is a factor of 60?
A) 11 B) 12 C) 13 D) 14 E) NOTA
- If $\frac{4}{5} = \frac{N}{15}$, then N =
A) 5 B) 9 C) 12 D) 25 E) 35
- Round the answer to the nearest hundredth: $3.21 + 3.62 \div 2.43$
A) 4.69 B) 2.81 C) 4.70 D) 15.02 E) NOTA
- $5^3 \cdot 5^8 =$
A) 5^{11} B) 5^{24} C) 25^{11} D) 25^{24} E) NOTA
- Judy’s heart beats 70 times a minute. At this rate, how many times does her heart beat in an hour?
A) 2800 B) 4200 C) 7000 D) 8400 E) 5000
- $9(x + 3) - (2x + 5) =$
A) $-11x - 2$ B) $7x - 32$ C) $11x - 22$
D) $7x + 22$ E) $-7x + 27$

7. Find 25% of 840.
- A) 210 B) 420 C) 1050 D) 730 E) 1680

8. Which of the following is the area of the square shown to the right?



- A) 210 B) 60 C) 213 D) 30 E) NOTA

9. The least common multiple of 20 and 12 is

- A) 240 B) 30 C) 60 D) 120 E) NOTA

10. The difference of a number n and the number 8 is 42. Which of the following equations represents this statement?

A) $\frac{n}{8} = 42$ B) $n - 8 = 42$ C) $n + 8 = 42$

D) $8n = 42$ E) $n = 5$

11. If $3x = y - 5$ and $x = -4$, then $y =$

- A) -7 B) 3 C) 7 D) 17 E) 9

12. If 9 is P percent of 17, then P is a number between

- A) 0 and 20 B) 20 and 40 C) 40 and 60

- D) 60 and 80 E) 80 and 100

13. Reduce the final answer: $\frac{22 + 4}{44 + 16} =$

- A) $\frac{13}{30}$ B) $\frac{1}{3}$ C) $\frac{4}{7}$ D) $\frac{13}{25}$ E) NOTA

14. Round to the nearest tenth, $\sqrt{6^2 + 3^2} =$
A) 5.8 B) 5.9 C) 8.0 D) 17.0 E) NOTA
15. A basketball team won 10 games and lost 15. What is the ratio of wins to the total number of games?
A) $\frac{2}{3}$ B) $\frac{3}{5}$ C) $\frac{2}{7}$ D) $\frac{3}{7}$ E) NOTA
16. Which of the following is the prime factorization of 28?
A) 2×7 B) 4×7 C) $2 \times 2 \times 7$ D) $2 \times 3 \times 3$ E) NOTA
17. $4(x + 6) + 2(3x - 5) =$
A) $4x + 14$ B) $10x + 34$ C) $10x + 14$
D) $10x - 24$ E) NOTA
18. The area A of a circle is given by the formula: $A = \pi r^2$
If the radius of the circle is 7 inches, find the area of the circle.
A) 36π sq. inches B) 7π sq. inches C) 49π sq. inches
D) 14π sq. inches E) NOTA
19. What is the average (arithmetic mean) of 34, 43, 17 and 67?
A) 58 B) 36 C) 42.5 D) 80.5 E) 40.25
20. $(-5)(16)(-3)(-2) =$
A) - 480 B) 480 C) 240 D) 160 E) NOTA

21. $\frac{2ab}{6a} =$

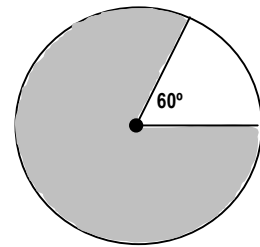
- A) $\frac{3}{b}$ B) $\frac{1}{3b}$ C) $\frac{b}{3}$ D) $\frac{3}{ab}$ E) $\frac{a}{b}$

22. If $y = \frac{1}{4}$, then $\frac{15}{y} =$

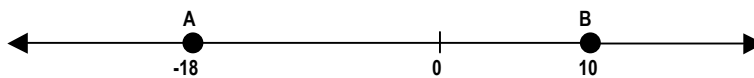
- A) $\frac{1}{60}$ B) $\frac{1}{5}$ C) 5 D) 60 E) 30

23. A circle with center O is shown to the right. What fractional part of the circle is shaded?

- A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) $\frac{3}{4}$ D) $\frac{9}{10}$ E) $\frac{4}{5}$



24. On a number line, what number represents the point half the distance between A and B?



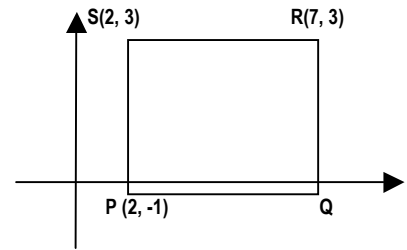
- A) - 4 B) - 5 C) 4 D) 2 E) - 8

25. Multiply and write the answer in proper scientific notation:
 $(1.9 \times 10^3) \times (5.8 \times 10^8)$

- A) 11.02×10^{11} B) 1.102×10^{12} C) 1.102×10^{10}
D) 1.102×10^{-11} E) NOTA

26. What are the coordinates of point Q of rectangle PQRS shown in the figure to the right?

- A) (-1, 7) B) (3, -1) C) (5, 2)
D) (7, -1) E) (2, -7)

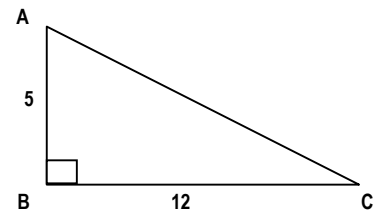


27. What is the lowest common denominator of: $\frac{11}{5} + \frac{2}{3} + \frac{1}{6}$

- A) 30 B) 15 C) 45 D) 60 E) 90

28. In the right triangle ABC shown to the right, what is the length of AC?

- A) 10 B) 14 C) 13 D) 169 E) NOTA



29. The price of a jacket was increased from \$140 to \$168. What was the percent increase in the price of the jacket?

- A) 10% B) 20% C) 30% D) 40% E) 16.7%

30. $(4x^3y^4)(-5x^2y^5) =$

- A) $-20x^6y^{20}$ B) $-20x^3 + -20y^4$ C) $-20x^5y^9$
D) $-20x^9y^{1028}$ E) $-20xy$

31. Simplify: $x^2 + 3x + 4x^2 - 10x + 8 - x$

- A) $5x^2 - 8x$ B) $5x^2 - 5x + 8$ C) $5x^2 - 8x + 8$
D) $5x^4 - 17x$ E) $5x^2 + 11x + 8$

32. Evaluate: $12 + (-16) + 24 - 18$

- A) -2 B) 2 C) 4 D) 18 E) 34

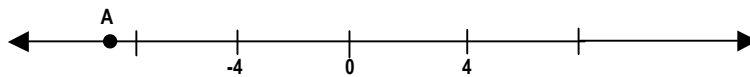
33. Evaluate: $7 + 3 \cdot 4 + 8 - 5$

- A) 43 B) -22 C) 32 D) 14 E) NOTA

34. Express in scientific notation: .0052

- A) 5.2×10^4 B) 5.2×10^3 C) 5.2×10^{-3}
D) 5.2×10^{-4} E) NOTA

35. Which is closest to the location of point A on the number line?



- A) -9 B) -5 C) 0 D) 5 E) 9

36. Round to the nearest whole number:
67.498

- A) 70 B) 68 C) 67.5 D) 67.4 E) NOTA

37. Convert 0.00456 meters to millimeters

- A) .456 mm B) 4.56 mm C) 45.6 mm
D) 456 mm E) NOTA

38. 2 extra large chocolate shakes contain 85 ounces of ice cream. How many ounces of ice cream are there in 12 extra large chocolate shakes?

- A) 510 ounces B) 1020 ounces C) 255 ounces
D) 480 ounces E) NOTA

39. Find the volume of a shoe box that measures 7 inches by 18 inches by 14 inches.

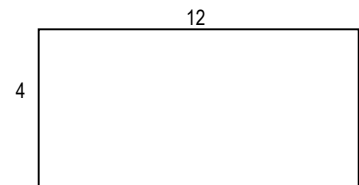
- A) 1764 cubic inches B) 1484 cubic inches
C) 2387 cubic inches D) 39 cubic inches
E) NOTA

40. In the formula $p = kt$, find t when $k = 36$ and $p = 144$.

- A) 5184 B) 4 C) 8 D) $\frac{1}{4}$ E) NOTA

41. Find the perimeter of the rectangle shown to the right.

- A) 32 B) 16 C) 48 D) 24 E) 8



42. Which of the following is the prime factorization of 510?

- A) $2 \times 3 \times 17$ B) $2 \times 3 \times 5 \times 11$ C) $2 \times 5 \times 13$
D) $2 \times 3 \times 5 \times 11 \times 17$ E) NOTA

43. Reduce the fraction $\frac{39}{91}$ to lowest terms

- A) $\frac{2}{3}$ B) $\frac{3}{5}$ C) $\frac{2}{7}$ D) $\frac{3}{7}$ E) NOTA

44. $\frac{3}{8} + \frac{5}{18} =$

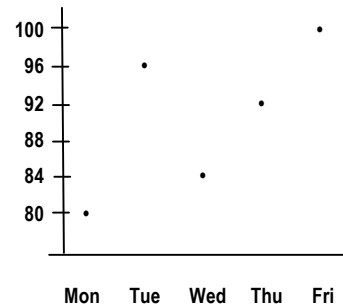
- A) $\frac{57}{72}$ B) $\frac{47}{72}$ C) $\frac{29}{36}$ D) $\frac{11}{18}$ E) NOTA

45. Change 8.75% to a decimal.

- A) .0875 B) .875 C) 8.75 D) 87.5 E) NOTA

46. The temperature at noon on each of five successive days is plotted on the graph shown to the right. Which day had the greatest increase in noon temperature from that of the previous day?

- A) Tuesday B) Wednesday C) Thursday
D) Friday E) NOTA



47. If one side of a square is 5 units, what is the area of the square?

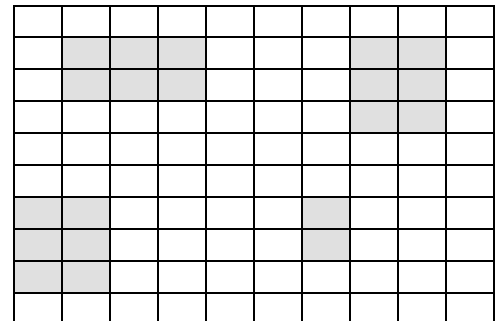
- A) 10 sq. units B) 20 sq. units C) 25 sq. units
D) 30 sq. units E) 45 sq. units

48. Change $4\frac{3}{5}$ to an improper fraction.

- A) $\frac{20}{5}$ B) $\frac{23}{5}$ C) $\frac{5}{23}$ D) $\frac{17}{5}$ E) $\frac{19}{5}$

49. The shaded part of the square can be expressed by

- A) .02 B) 20% C) $\frac{2}{5}$ D) $\frac{1}{4}$ E) NOTA



50. Which of these is in the order of least to greatest?

A) $-\frac{17}{25}, -\frac{5}{8}, \frac{1}{4}, \frac{3}{4}, \frac{11}{16}$

B) $\frac{1}{4}, -\frac{17}{25}, \frac{3}{4}, \frac{11}{16}, -\frac{5}{8}$

C) $-\frac{5}{8}, -\frac{17}{25}, \frac{11}{16}, \frac{1}{4}, \frac{3}{4}$

D) $-\frac{17}{25}, -\frac{5}{8}, \frac{3}{4}, \frac{1}{4}, \frac{11}{16}$

E) NOTA

Algebra Challenge Pre-Test Answers

1	B		26	D
2	C		27	A
3	C		28	C
4	A		29	B
5	B		30	C
6	D		31	C
7	A		32	B
8	E		33	E
9	C		34	C
10	B		35	A
11	A		36	E
12	C		37	B
13	A		38	A
14	E		39	A
15	E		40	B
16	C		41	A
17	C		42	E
18	C		43	D
19	E		44	B
20	A		45	A
21	C		46	A
22	D		47	C
23	A		48	B
24	A		49	B
25	B		50	E