Honors Geometry Challenge-Sample Test (May)

50 questions – 60 minutes
Multiple Choice
Use the answer "NOTA" (which stands for None Of The Above) if the answer is not listed

1. Evaluate $7m + 3mn$ when $m = 8$ and $n = 14$

   A) 84 B) 196 C) 392 D) 168 E) NOTA

2. Simplify: $675 \div (6 + 9 \div 3)$

   A) 15 B) 9 C) 75 D) 225 E) 135

3. $(4x^2y^3)^2 =$

   A) $8x^4y^5$ B) $16x^4y^5$ C) $4x^4y^6$

   D) $16x^2y^3$ E) NOTA

4. $(3x - 2)(4x + 1) =$

   A) $12x^2 - 8x - 2$ B) $12x^2 + 5x - 2$ C) $x^2 - 5x - 2$

   D) $12x^2 - 5x - 2$ E) NOTA

5. $(4xy^2)^{-3} =$

   A) $-64x^3y^6$ B) $\frac{1}{4x^3y^6}$ C) $\frac{1}{64x^3y^6}$

   D) $-\frac{4}{x^3y^6}$ E) NOTA

6. $(x - 4)(x + 4) =$

   A) $x^2 - 16$ B) $x^2 + 16$ C) $x^2 - 8x + 16$

   D) $x^2 + 8x + 16$ E) NOTA

7. Find the equation that best represents the following word problem:
In a certain freshman class, the number of girls is 83 less than twice the number of boys (b). The total number of students in that freshman class is 259. How many boys and girls are in that class?

A) $b + 2b = 259 - 83$ B) $b + 2b - 83 = 259$

C) $b + 83 - 2b = 259$ D) $b + 2b = 259$

E) NOTA

8. Factor: $6x^2 - 13x - 5$

A) $(6x + 5)(x - 1)$ B) $(3x + 1)(2x - 5)$

C) $(6x - 1)(x + 5)$ D) $(2x - 1)(3x + 5)$ E) NOTA

9. Which one of the following equals a negative number?

A) $(-5) + 9$
B) $(-9) + 5$
C) $9 + 5$
D) $5 + (-9) + 4$
E) $9 - (-5)$

10. Solve the system of equations: $3x + 4y = 11$
$x - 2y = -3$

A) $x = 1 \quad y = 2$
B) $x = -1 \quad y = \frac{3}{4}$
C) $x = 2 \quad y = -3$
D) $x = 1 \quad y = -2$
E) NOTA

11. Factor: $25x^2 - 16y^2$

A) $(5x - 4y)^2$ B) $5(5x - 4y)$ C) $(5x + 4y)(5x - 4y)$

D) $(5x + 2y)(5x - 8y)$ E) NOTA

12. Solve: $2x^2 + 5x - 3 = 0$

A) 3, 2 B) $-3, \frac{1}{2}$ C) $\frac{3}{2}, 1$ D) $3, \frac{1}{2}$ E) NOTA

13. If $\begin{cases} 3x + y = 10 \\ x - 4y = -1 \end{cases}$ then y =

A) 1 B) 3 C) −2 D) $\frac{7}{13}$ E) − 1

14. Solve: $\frac{1}{3}y + 28 = -5$

A) −11 B) 11 C) 99 D) 96 E) NOTA

15. Solve: $3x + 17 - 5x = 12 - (6x + 3)$

A)2 B) 4 C) 0 D) − 4 E) NOTA

16. You and three friends are eating a pizza with 12 pieces. Each person eats the same number of pieces. Let x represent the number of pieces each person eats. Which of the following equations is an algebraic model for the situation?

A) $3x = 12$ B) $\frac{1}{3}x = 12$ C) $4x = 12$

D) $\frac{1}{4}x = 12$ E) NOTA

17. $(3x + 4)^2 =$

A) $9x^2 + 12x + 16$ B) $9x^2 + 16$ C) $9x^2 + 24x + 16$

D) $9x + 16$ E) $25x^2$

18. Solve: $3x\,(x - 4)(3x + 5) = 0$

A) $4, -\frac{5}{3}$ B) $-4, -\frac{5}{3}, 3, 0$ C) $-\frac{5}{3}, 4, 0$

D) 4, –5, 0 E) NOTA

19. One of the solutions of the equation: $3x^2 + 11x = 4$ is

A) 0 B) $-\frac{11}{3}$ C) 4 D) $\frac{1}{3}$ E) NOTA

20. Simplify: $(3cd^6)^3(cd)^4$

A) $27c^7d^{10}$ B) $27c^7d^{13}$ C) $9c^7d^{22}$

D) $27c^{12}d^{72}$ E) $27c^7d^{22}$

21. Simplify: $(4c^4 + 1) - (7c^3 - 3) + (2c^4 + 5c^3)$

A) $6c^4 + 2c^3 - 4$ B) $6c^4 - 2c^3 + 4$ C) $6c^4 - 2c^3 - 2$

D) $2c^4 - 2c^3 - 2$ E) $4c + 4$

22. The number ten is raised to a power between 0 and 1. The answer has to be between which two numbers?

A) 0 and 1
B) 1 and 10
C) 10 and 100 but not 5
D) 0 and 100 but not 50
E) – 10 and 0

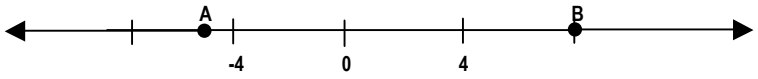
23. Which of the following is the least?

A) .27 B) $\frac{1}{4}$ C) $\frac{3}{8}$ D) $\frac{2}{11}$ E) 11%

24. If $x = 2$ and $y = -3$, then $-xy^2 =$

A) −36 B) −18 C) −12 D) 12 E) 18

25. Which is closest to the distance between A and B on the number line?



A) -9 B) -5 C) 13 D) 5 E) 12

26. Define $p \sim q$ by the equation $p \sim q = p^2q^3 - 3q$. Then

$2 \sim 3 =$

A) 108 B) 27 C) 99 D) 117 E) 89

27. If $7x + 4 = -19 + 5x$, then $2x - 14$ equals

A) 23 B) -23 C) -3 D) 16 E) NOTA

28. Which of the following best describes the circled part of the statement?

(7x + 9) = 40

A) Coefficient
B) Variable
C) Term
D) Expression
E) Solution

29. Solve for x:

$5x - 10 = 2 - 2x + 10(x - 3)$

A) 6 B) 3 C) - 3 D) - 14 E) NOTA

30. Solve for r: $A = p + prt$

A) $\frac{A}{1+tp}$ B) $t(A - p)$ C) $\frac{A - p}{pt}$

D) $\frac{pt}{A - p}$ E) NOTA

31. One factor of $5x^2 - 3x - 2$ is

A) 5x+2 B) 5x-2 C) x+1 D) 5x+1 E) 5x-1

32. Write the answer in proper scientific notation:
$(7 \times 10^5) \times (3 \times 10^4)$

A) 21×10^9 B) 21×10^{20} C) 2.1×10^8

D) 2.1×10^7 E) NOTA

33. Factor: $8a^2 - 17a + 2$

A) (2a – 2)(4a – 1) B) a (8a – 17) + 2 C) (8a – 2)(a – 1)

D) (8a + 1)(a – 2) E) (8a – 1)(a – 2)

34. Find a possible middle term to make this polynomial factorable:

x^2 + _____ + 20

A) 12x B) 13x C) 7x D) 3x E) -10x

35. $\frac{x^2y^6}{x^2y^2}$ =

A) y^4 B) y^4z^3 C) z^3 D) x y z E) y^6z^3

36. $(y^2 + 2y - 3) - (4y^2 - 5y - 2)$ =

A) $-3y^2 - 9y + 5$ B) $-3y^2 - 9y + 1$ C) $-3y^2 - y + 5$

D) $-3y^2 + y - 5$ E) $-3y^2 + 7y - 1$

37. The solutions of the equation $2x^2 - 6x - 8 = 0$ are:

A) -4 and 1 B) $2, 4$ and -1 C) -2 and $\frac{1}{2}$

D) $\frac{-1}{2}$ and 2 E) -1 and 4

38. Find the x-coordinate of the system:

$3x + 3y = 4$
$x - 3y = 1$

A) $\frac{6}{5}$ B) $\frac{1}{3}$ C) 1 D) $\frac{5}{4}$ E) $\frac{5}{3}$

39. Find the slope of the line that passes through (4, 7) and (1, 3)

A) $\frac{-4}{3}$ B) $\frac{-3}{4}$ C) $\frac{3}{4}$ D) $\frac{4}{3}$ E) 2

40. Find the slope and y-intercept of the line whose equation is $y = \frac{3}{2}x - 2$

A) slope = 2, y-int = $\frac{3}{2}$ B) slope = - $\frac{3}{2}$, y-int = 4

C) slope = 2, y-int = –3 D) slope = –2, y-int = $\frac{3}{2}$

E) slope = $\frac{3}{2}$, y-int = –2

41. Find the equation of the line containing the point (–3, 5) and having slope: 4

A) y = 4x – 7 B) y = 4x C) y = – 4x – 24

D) y = 4x + 17 E) NOTA

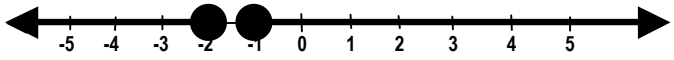
42. Solve: $4x + 5 \leq 3 + 6x$

A) $x \leq -4$ B) $x \geq 1$ C) $x \leq 4$

D) $x \geq -4$ E) $x \geq 4$

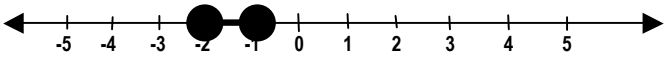
43. Which of the following graphs represents the solution of $|2x + 3| \geq 1$

A) 

B) 

C) 

D) 

E) 

44. The solutions to $x^2 + 2x - 12 = -12$ are:

A) 0, – 2 B) –4, 6 C) –6, 4 D) 12, 2 E) NOTA

45. $\frac{x^2 - 5x}{x^2 - 25} =$

A) $\frac{x}{5}$ B) $\frac{-x}{5}$ C) $\frac{x}{x-25}$

D) $\frac{x}{x-5}$ E) $\frac{x}{x+5}$

46. Which pair of lines represent graphs that are perpendicular?

A) $y = -3x + 5$
$y = -3x + 2$

B) $y = 5x + 5$
$y = 10x + 5$

C) $2y = 4x - 16$
$y = 2x - 8$

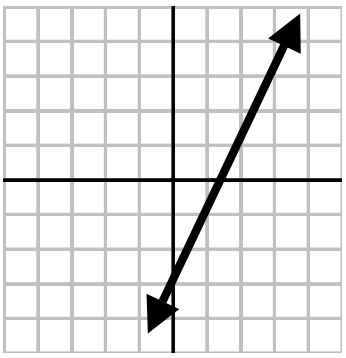
D) $y = 9$
$x = 5$

E) $y = x$
$y = 3$

47. The graph of $x - 4y + 8 = 0$ crosses the y-axis at

A) -8 B) -2 C) 0 D) 2 E) 8

48. Which equation is graphed to the right?



A) $x + y = 2$ B) $2x - y = 3$ C) $2x + y = 3$

D) $2x - y = 5$ E) $3x + y = 2$

49. The sum of one fifth of a number and three is equal to half of the number. What is the number?

A) 5 B) 10 C) 15 D) 20 E) NOTA

50. A boy is mowing a rectangular lawn 40 ft. long and 30 ft. wide. He has cut all of it except for a rectangle that is 20 ft. long and 15 ft. wide. What fractional part of the lawn remains uncut?

A) $\frac{1}{4}$ B) $\frac{2}{5}$ C) $\frac{3}{125}$ D) $\frac{3}{4}$ E) NOTA

Answers for Honors Geo Challenge Sample-May

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