Honors Geometry Summer Packet

If your student is taking Honors Algebra 1, Honors Geometry, Honors Algebra 2, Precalculus or AP Calculus AB/BC, he or she will need to work on a packet of review material over the summer.

The problems are review materials from the previous class taken.

We recommend that your student organizes the work for the packet in a spiral notebook or loose leaf paper stapled together.

When your student finishes the packet, please sign this sheet of paper.

Your student will need to return this sheet and the packet to his or her teacher at the beginning of the 2019-2020 school year. His or her teacher will have a few days for your child to ask questions and then there will be a test (without a calculator) over the material during the first week of school.

Packets are also on the High School Math Department web page.

Student Name_____

Student Signature_____Date_____

Parent Name_____

Parent Signature_____Date_____

Name: _____ Class: _____ Date: _____ ID: A

Honors Geometry Summer Prerequisite Packet

Completion

Complete each statement.

1. What value of n in the equation $nx + 7 = 4y$ would give a line with slope 2?
2. The lines described by $y = (4a - 6)x$ and $y = \frac{1}{5}x$ are perpendicular. What is the value of a?
3. The lines described by $y = (9a - 7)x$ and $y = \frac{1}{5}x$ are perpendicular. What is the value of a?

Short Answer

1. Salvador has saved 130 sand dollars and wants to give them away equally to n friends. Write an expression to show how many sand dollars each of Salvador's friends will receive. Then, find the total number of sand dollars each of Salvador's friends will get if Salvador gives them to 10 friends.
2. Evaluate the expression $2m + n$ for $m = 7$ and $n = 9$.
3. The range of a set of scores is 23, and the lowest score is 33. Write and solve an equation to find the highest score. (*Hint*: In a data set, the range is the difference between the highest and the lowest values.)
4. The time between a flash of lightning and the sound of its thunder can be used to estimate the distance from a lightning strike. The distance from the strike is the number of seconds between seeing the flash and hearing the thunder divided by 5. Suppose you are 17 miles from a lightning strike. Write and solve an equation to find how many seconds there would be between the flash and thunder.
5. If $4x = 32$, find the value of $35 - 5x$.
6. Solve $\frac{f}{45} - \frac{2}{9} = \frac{2}{9}$.
7. Solve $43a + 10 - 26a = 27$.
8. If $8y - 8 = 24$, find the value of $2y$.
9. The formula $p = nc - e$ gives the profit p when a number of items n are each sold at a cost c and expenses e are subtracted. If $p = 3750$, $n = 3000$, and $e = 900$, what is the value of c?
10. Solve $-6m - 6 + 8m = -5 + 2m - 1$. Tell whether the equation has one solution, 2 solutions, infinitely many solutions, or no solutions.
11. A video store charges a monthly membership fee of \$7.50, but the charge to rent each movie is only \$1.00 per movie. Another store has no membership fee, but it costs \$2.50 to rent each movie. How many movies need to be rented each month for the total fees to be the same from either company?
12. Find three consecutive integers such that twice the greatest integer is 2 less than 3 times the least integer.
13. A professional cyclist is training for the Tour de France. What was his average speed in miles per hour if he rode the 120 miles from Laval to Blois in 4.7 hours? Use the formula $d = rt$, and round your answer to the nearest tenth.

14. The formula for the resistance of a conductor with voltage V and current I is $r = \frac{V}{I}$. Solve for V.

15. Solve $4x - z = y$ for x.

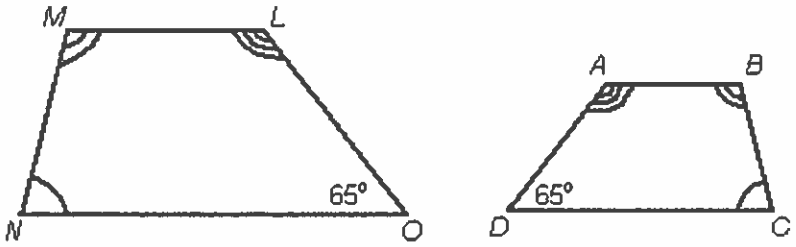
16. Solve $3.8y + \frac{4}{7}x + 2 = 0$ for y.

17. Solve $7|x - 6| = 49$.

18. Solve $|6x - 9| + 5 = 2$.

19. The fuel for a chain saw is a mix of oil and gasoline. The ratio of ounces of oil to gallons of gasoline is 7:19. There are 38 gallons of gasoline. How many ounces of oil are there?

20. Find the value of MN if $AB = 21$ cm, $BC = 16.8$ cm, and $LM = 28$ cm.
$ABCD \sim LMNO$



21. On a sunny day, a 5-foot red kangaroo casts a shadow that is 7 feet long. The shadow of a nearby eucalyptus tree is 35 feet long. Write and solve a proportion to find the height of the tree.

22. Triangles C and D are similar. The area of triangle C is 47.6 in^2. The base of triangle D is 6.72 in. Each dimension of D is $\frac{6}{5}$ the corresponding dimension of C. What is the height of D ?

23. Solve the inequality and graph the solution.
$x + 1\frac{2}{5} \leq 6\frac{8}{10}$

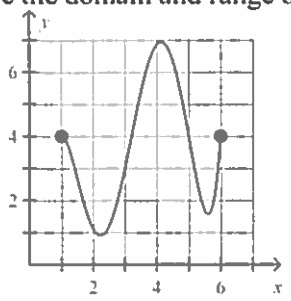
24. What is the greatest possible integer solution of the inequality $2.847x < 15.168$?

25. Solve the inequality and graph the solution.
$-3x + 2.5x \leq 1.5(x + 4)$

26. Solve the inequality $|x - 10| - 9 < -1$ and graph the solutions. Then write the solutions as a compound inequality.

27. Solve and graph the solutions of $|x - 6| - 3 > 12$. Write the solutions as a compound inequality.

28. Give the domain and range of the relation.



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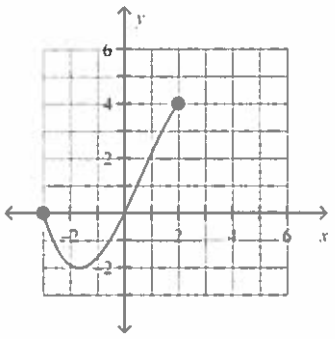

30. Give the domain and range of the relation. Tell whether the relation is a function.

x	y
0	–5
1	–1
1	3
1	6

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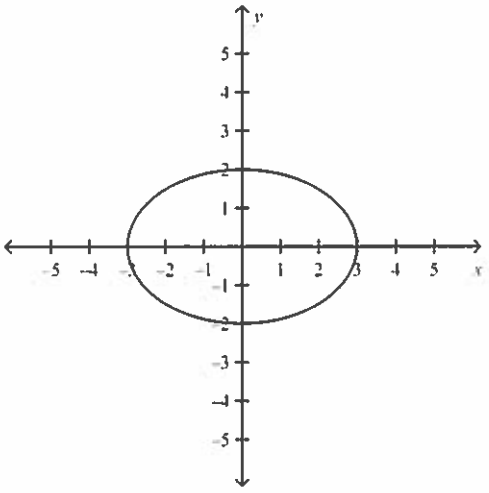


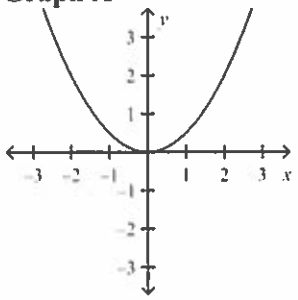
32. For $f(x) = -4x + 2$, find $f(x)$ when $x = -1$.

33. Find the 20th term in the arithmetic sequence –4, 1, 6, 11, 16,...

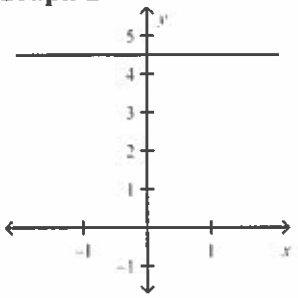
34. Sylvie is going on vacation. She has already driven 60 miles in one hour. Her average speed for the rest of the trip is 57 miles per hour. How far will Sylvie have driven 7 hours later?

35. Identify whether each graph represents a function. If the graph does represent a function, is the function linear?

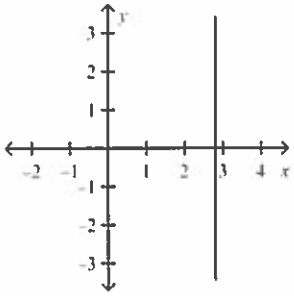
Graph A



Graph B

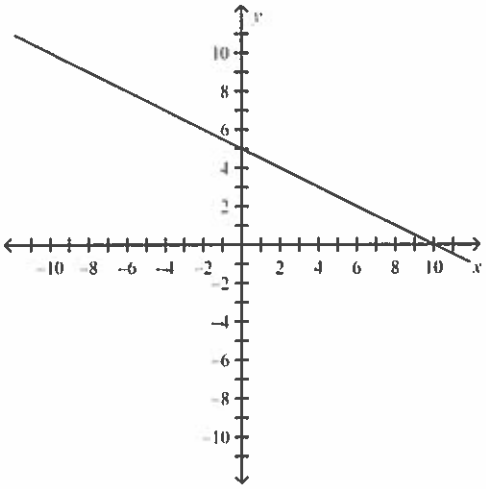


Graph C



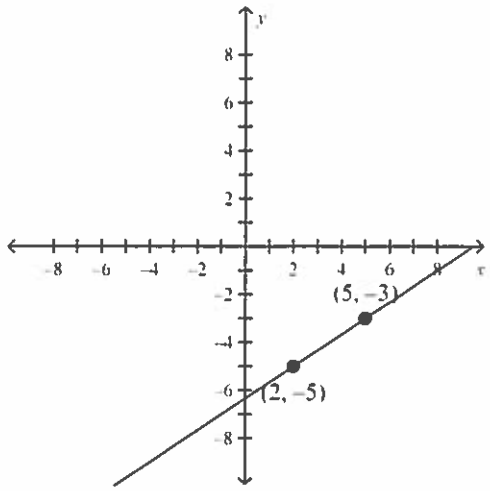
36. Tell whether the function $y = 5x - 3$ is linear. If so, graph the function.

37. Find the x- and y-intercepts.

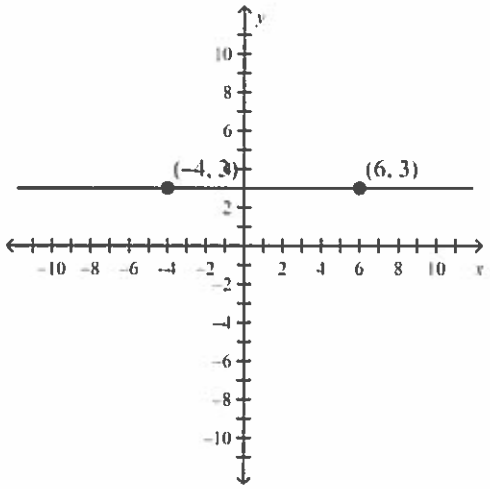


38. Use intercepts to graph the line described by the equation $3x + 2y = 6$.

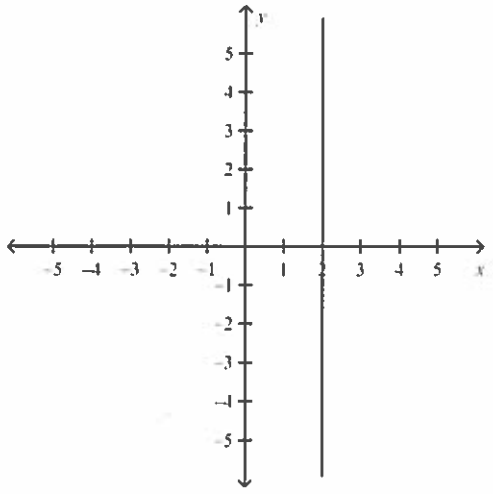
39. Find the slope of the line.



40. Find the slope of the line.

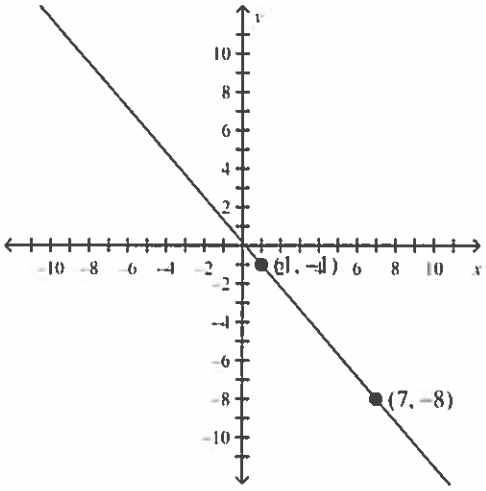


41. Tell whether the slope of the line is positive, negative, zero, or undefined.



42. Find the slope of the line that contains (1, 6) and (10, −9).

43. The graph shows a linear relationship. Find the slope.



44. Find the slope of the line described by $x - 3y = -6$.

45. Graph the line with the slope $\frac{1}{3}$ and y-intercept −2.

46. Write the equation that describes the line in slope-intercept form.
slope = 4, point (3, −2) is on the line

47. Write the equation $4x + 8y = -24$ in slope-intercept form. Then graph the line described by the equation.

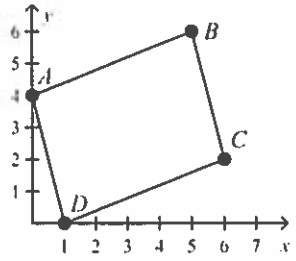
48. Write an equation in point-slope form for the line that has a slope of 6 and contains the point (−8, −7).

49. Graph the line described by the equation $y - 2 = \frac{5}{3}(x - 3)$.

50. The points (−4, −3) and (−1, −8) are on a line. Find the intercepts to the nearest tenth.

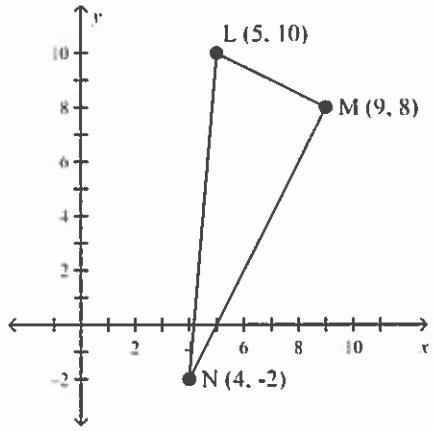
51. The equations of four lines are given. Identify which lines are parallel.
Line 1: $y = 8x - 3$
Line 2: $y - 6 = \frac{1}{8}(x - 4)$
Line 3: $y = 3x + 4$
Line 4: $x - \frac{1}{3}y = -4$

52. Show that $ABCD$ is a parallelogram.



53. Identify the lines that are perpendicular:
$y = 4$; $y = \frac{1}{5}x - 5$; $x = 8$; $y + 5 = -5(x + 1)$

54. Show that LMN is a right triangle.



55. Write an equation in slope-intercept form for the line perpendicular to $y = 8x - 9$ that passes through the point $(9, -9)$.

56. Solve $\begin{cases} 4x - 4y = -16 \\ x - 2y = -12 \end{cases}$ by substitution. Express your answer as an ordered pair.

57. Solve $\begin{cases} -7x + 5y = -5 \\ -9x + 5y = 5 \end{cases}$ by elimination. Express your answer as an ordered pair.

58. Solve $\begin{cases} y = -x + 8 \\ x + y = 7 \end{cases}$.

59. Solve $\begin{cases} y = 2x - 1 \\ 2x - y - 1 = 0 \end{cases}$.

60. Graph the solutions of the linear inequality $-8x + 2y > -6$.

61. Graph the inequality $0 > 9 + 6x - 9y$.

62. Simplify 2^{-3}.

63. Simplify $(-4)^0$.

64. Evaluate $a^{-2}b^0$ for $a = -3$ and $b = -3$.

65. Simplify $\frac{9x^0y^{-8}}{z^{-8}}$.

66. Simplify the expression $125^{\frac{1}{3}}$.

67. Simplify the expression $216^{\frac{2}{3}}$.

68. Find the degree of the monomial $-5a^7b^4$.

69. Find the degree of the polynomial $3x^3y^6 + 5xy + x^3$.

70. Write the polynomial $3x^2 - 8x - 12x^5 - 5x^3 + 2x^4 - 6$ in standard form. Then give the leading coefficient.

71. Add or subtract.
$-10m + 2m^4 - 13m - 20m^4$

72. Subtract.
$(8b^4 - b^3) - (b^4 + 4b^3 - 4)$

73. The legs of an isosceles triangle measure $2x^4 + 2x - 1$ units. The perimeter of the triangle is $5x^4 - 2x^3 + x - 3$ units. Write a polynomial that represents the measure of the base of the triangle.

74. Multiply.
$(\frac{2}{3}p^4y^3)(y^4s^5)(6p^2s^3)$

75. Multiply.
$9x^4y^5\left(-5x^3y^3 - 3y^3\right)$

76. Multiply.
$(5x - 3)(x^3 - 5x + 2)$

77. Multiply.
$(6w + 6z)^2$

78. Factor the polynomial $12y^3 + 33y^2 - 6y$.

79. Factor $4x^3 - 16x^2 + 12 - 3x$.

80. Factor $x^2 + 20x + 36$. Check that the original polynomial and the factored form have the same values for $x =$ 0, 1, 2, 3, and 4.

81. Factor the trinomial $x^4 + 50x^2 + 625$.

82. Factor $3x^2 + 2x - 8$ by guess and check.

83. Factor $2x^2 + 7x + 6$.

84. Factor $27x^2z + 36xz + 12z$ completely.

85. Factor the polynomial $30x^3 + 22x^2 + 4x$ completely.

86. Tell whether the function $y + 2x^2 = -2$ is quadratic. Explain.

87. Solve $8x = x^2 - 9$ using the Quadratic Formula.

88. Solve $3x^2 - 6x + 1 = 0$ using the Quadratic Formula. If necessary, round to the nearest hundredth.

89. Solve $c^2 + 10c + 16 = 0$.

90. Solve for the equation. Check your answer.
$(x + 10)^3 = 8$

91. Find the next three terms in the geometric sequence $-36, 6, -1, \frac{1}{6}, \ldots$

92. An experiment consists of spinning a spinner. Use the results in the table to find the experimental probability that the spinner does not land on purple. Express your answer as a fraction in simplest form.

Outcome	Frequency
red	8
purple	12
yellow	10

93. At a carnival game, you may win an inflatable crayon, you may win a small stuffed animal, or you may win nothing at all. If the probability of winning nothing is 0.69 and the probability of winning a small stuffed animal is 0.17, what is the probability of winning an inflatable crayon? Express your answer as a decimal.

94. A grab bag contains 3 football cards and 7 basketball cards. An experiment consists of taking one card out of the bag, replacing it, and then selecting another card. What is the probability of selecting a football card and then a basketball card? Express your answer as a decimal.

95. A bag contains hair ribbons for a spirit rally. The bag contains 3 black ribbons and 12 green ribbons. Lila selects a ribbon at random, then Jessica selects a ribbon at random from the remaining ribbons. What is the probability that Lila selects a black ribbon and Jessica selects a green ribbon? Express your answer as a fraction in simplest form.

96. Find the x- and y-intercepts of $-x + 2y = 8$.

97. Isabel reads 15 books from the library each month for y months in a row. Write an expression to show how many books Isabel read in all. Then, find the number of books Isabel read if she read for 12 months.