

To: Honors Algebra 1 Students:

Summer is finally here . . .

In anticipation of the next school year, we want to do everything possible to ensure that it will be very successful. A basic knowledge of Math concepts and proficiency of the concepts will give a good foundation for your continued learning in math of Algebra concepts. Therefore, we have the following summer packet for you to complete.

It is required that you complete all the problems showing ALL necessary work in the spaces provided. Please note when a calculator is allowed and when a calculator is not allowed. This packet will be checked the first day of class, either first or second semester. You will be quizzed on this material within the first few weeks of class. The grade for this quiz will be included in your first marking period average.

During the first week of the semester, we will offer review sessions during activity periods for those who feel they need some extra help. Attendance is optional, so if you are comfortable with your Math skills there is no need to attend. However, we will be glad to give you a refresher if you had some problems with packet. Please come prepared with questions to help sessions.

You will be required to have a graphing calculator for you Algebra 1 class. We suggest the TI-84 or TI-84 Plus CE. This calculator will be needed for all math classes here at Notre Dame High School.

Have an enjoyable, relaxing summer. We're looking forward to seeing you during the next school year. If you have any questions, please contact the math department.

Sincerely,

Algebra 1 Teachers
Notre Dame High School

Fractions – Adding and Subtracting NO CALCULATOR! Show all work!

Rules:

1) Find LCD

$$3\frac{1}{9} = 3\frac{2}{18} = 2\frac{20}{18}$$

$$4\frac{3}{4} = 4\frac{9}{12}$$

2) Change to equivalent fractions

$$-1\frac{5}{6} = 1\frac{15}{18} = 1\frac{15}{18}$$

$$+5\frac{5}{6} = 5\frac{10}{12}$$

3) Add or Subtract

4) Simply

$$1\frac{5}{18}$$

$$9\frac{19}{12} = 10\frac{7}{12}$$

1. $\frac{5}{6} + \frac{1}{3}$	2. $\frac{4}{5} - \frac{2}{3}$	3. $6\frac{1}{3} + 4\frac{3}{5}$
4. $5\frac{1}{2} + 1\frac{3}{5}$	5. $9\frac{3}{4} - 4\frac{2}{5}$	6. $8\frac{1}{9} - 2\frac{5}{6}$

Fractions – Multiplying and Dividing NO CALCULATOR! Show all work!

Rules:

1) Change all mixed numbers to improper

$$2\frac{2}{3} \times \frac{9}{20} = \frac{8^2}{3^1} \times \frac{9^3}{20^5} = \frac{2}{1} \times \frac{3}{5} = \frac{6}{5} = 1\frac{1}{5}$$

2) Cancel GCFs when possible

3) Multiply across and Simplify

1) Change all mixed numbers to improper

$$2\frac{3}{4} \div 3\frac{1}{2} = \frac{11}{4} \div \frac{7}{2} = \frac{11}{4^2} \times \frac{2^1}{7} =$$

2) Change $\times$ to $\div$ and take the reciprocal of second number

3) Cancel GCFs when possible

$$\frac{11}{2} \times \frac{1}{7} = \frac{11}{14}$$

4) Multiply across and Simplify

7. $\frac{5}{16} \times \frac{12}{25}$	8. $1\frac{1}{9} \times 2\frac{2}{5}$	9. $\frac{4}{5} \div \frac{2}{3}$	10. $3\frac{1}{4} \div 2\frac{1}{6}$
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Decimals – Adding and Subtracting NO CALCULATOR! Show all work!

Rules:

- 1) Line up decimal points, if a number does not have a decimal point it is a whole number with the decimal point at the end
 $4.1 + 5.61 + 21 =$ $16 - 7.489$
 - 2) Annex zeros to hold places
 - 3) Add or subtract vertically 4.10 16.000
 - 4) Bring down the decimal point 5.61 $\underline{-7.489}$
- $$\begin{array}{r} 4.10 \\ 5.61 \\ +21.00 \\ \hline 30.71 \end{array}$$
- $$\begin{array}{r} 16.000 \\ \underline{-7.489} \\ 8.511 \end{array}$$

11. $5.1 + 2.23 + 8$	12. $6.7 - 3.987$	13. $7.3 + 4.3 + 12 + 0.543$

Decimals – Multiplying NO CALCULATOR! Show all work!

Rules:

Multiplying

- 1) Line up digits, starting at the right 6.42 (2 decimal places)
- 2) Multiply $\times 4.3$ (1 decimal place)
- 3) Place the decimal point in the answer by starting at the right 1926
and moving a number of places equal to the sum of the decimal $\underline{25680}$
places in both numbers multiplied 27.606 (3 decimal places)

14. 36.8×1.7	15. 4.68×0.14

Decimals –Dividing NO CALCULATOR! Show all work!

Rules:

Dividing

- 1) If the divisor is not a whole number, move the decimal point to the right to make a whole number and move the decimal point in the dividend the same number of places. $27.216 \div 4.8$

2) Divide

- 3) Bring the decimal point up to the quotient

$$\begin{array}{r} \underline{5.67} \\ 48 \overline{)272.16} \\ \underline{-240} \\ 321 \\ \underline{-288} \\ 336 \\ \underline{-336} \end{array}$$

16. $84.48 \div 8.8$

17. $48.72 \div 0.5$

Order of Operations NO CALCULATOR! Show all steps!

Rules:

Parentheses (Grouping Symbols)	$[(7 - 4)^2 \div 3] + 15$	$\frac{(9-7)^2+6}{11-6}$
Exponents	$[3^2 \div 3] + 15$	$\frac{2^2+6}{5}$
Multiply or Divide from left to right	$[9 \div 3] + 15$	$\frac{4+6}{5}$
Add or Subtract from left to right	$3 + 15$	$\frac{10}{5}$
	18	2

18. $6 \div 3 + 2 \times 7$

19. $[10 + (5^2 \times 2)] \div 6$

20. $\frac{9 \times 2}{4+3^2-7}$

Integers – Adding and Subtracting NO CALCULATOR!

Rules:

Addition

Same Signs – add and use the same sign $-4 + -5 = -9$ $4 + 5 = 9$

Opposite Signs – subtract the smaller absolute value from the larger absolute value and use the sign of the number with the larger absolute value $3 + -9 = -6$ $-12 + 17 = 5$

Subtraction To subtract an integer add it's opposite $3 - 12 = 3 + -12 = -9$

$$-4 - (-10) = -4 + 10 = 6$$

21. $7 + -9 =$	22. $-12 + 15 =$	23. $13 - 17$	24. $-2 - (-10) =$
25. $-6 + -7 =$	26. $-14 + 9 =$	27. $-11 - 5 =$	28. $13 - (-7) =$

Integers – Multiplying and Dividing NO CALCULATOR!

Rules

Same Signs – if two numbers have the same sign, their product or quotient is positive

$$-7 \times -8 = 56 \quad 18 \div 6 = 3$$

Opposite Signs – if two numbers have opposite signs, their product or quotient is negative

$$-3 \times 7 = -21 \quad -24 \div 3 = -8$$

29. $-5 \times -6 =$	30. $10 \times -2 =$	31. $-45 \div -9 =$
32. $16 \div -4 =$	33. $5 \times -2 \times 7 =$	34. $-3 \times 2 \times 4 \times -1 =$

Plotting Points on the Coordinate Plane NO CALCULATOR!

Rules

1) Start at the origin (0, 0)

2) The first number is the x value.

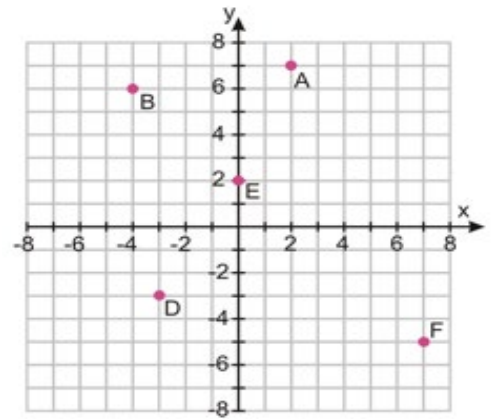
If x is positive, you move to the right of the origin that many units.

If x is negative, you move to the left of the origin that many units

3) The second number is the y value.

If y is positive, you move above the origin that many units.

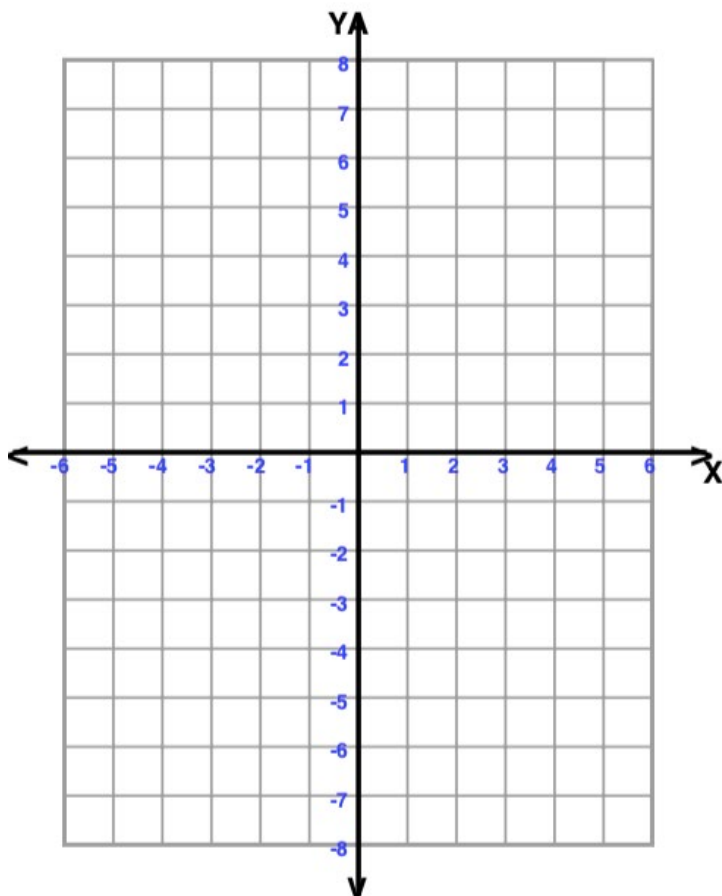
If y is negative, you move below the origin that many units



A ((2, 7) B (-4, 6) D (-3, -3)
E (0, 2) F (7, -5)

Plot and label the following points:

35. A (-2, 7) 36. B (5, -1) 37. C (0, -5) 38. D (-4, -4) 39. E (2, 0) 40. F (3, 5)



Percents - CALCULATOR!

Rules

Percent to Decimal – move decimal point 2 places to the left $3\% = .03$ $45\% = .45$ $125\% = 1.25$

Decimal to Percent – move decimal place 2 places to the right $.35 = 35\%$ $.07 = 7\%$ $2.2 = 220\%$

Percent to Fraction – put the percent over 100 and simplify $25\% = \frac{25}{100} = \frac{1}{4}$ $9\% = \frac{9}{100}$ $150\% = \frac{150}{100} = \frac{3}{2}$

Fraction to a Percent – set the denominator equal to 100 or divide the numerator by the denominator and move the decimal point 2 places to the right $\frac{2}{5} = \frac{40}{100} = 40\%$ *or* $2 \div 5 = .4 = 40\%$

Complete the chart. Simplify the fractions.

Decimal	Fraction	Percent
41. .75		
42.	$\frac{4}{5}$	
43.		15%
44. .08		
45.	$\frac{7}{10}$	
46.		250%

Percents - CALCULATOR!

Rules

Type 1 – Finding the Is (the Part) multiply by the decimal or fraction equivalent of the percent

30% of 50 $.3 \times 50 = 15$ *or* $\frac{3}{10} \times 50 = 15$ 125% of 80 $1.25 \times 80 = 100$ *or* $\frac{5}{4} \times 80 = 100$

Type 2 – Finding the Percent Use the proportion $\frac{\%}{100} = \frac{is}{of}$

What percent of 40 is 25? $\frac{x}{100} = \frac{25}{40}$ $40x = 2500$ $x = 62.5\%$

30 is what percent of 20? $\frac{x}{100} = \frac{30}{20}$ $20x = 3000$ $x = 150\%$

Type 3 – Finding the Of (the Whole) Use the proportion $\frac{\%}{100} = \frac{is}{of}$

60 is 15% of what number? $\frac{15}{100} = \frac{60}{x}$ $15x = 6000$ $x = 400$

125% of what number is 75? $\frac{125}{100} = \frac{75}{x}$ $125x = 7500$ $x = 60$

47. 55% of 80	48. What % of 90 is 27?	49. 60% of what number is 54?
50. 130% of 50	51. 24 is what % of 15??	52. 72 is 40% of what number?

Geometry - CALCULATOR! Show all work.

Formulas

Perimeter of Rectangle

$$P = 2L + 2W$$

Area of Rectangle

$$A = L \times W \text{ or } A = B \times H$$

Perimeter of Triangle

$$P = s + s + s$$

Area of Triangle

$$A = \frac{1}{2}BH$$

Circumference of Circle

$$C = \pi d \text{ or } C = 2\pi r \quad \pi \approx 3.14$$

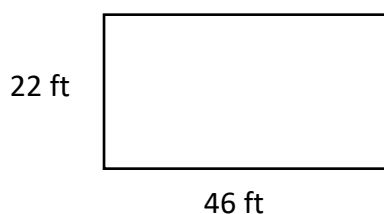
Area of Circle

$$A = \pi r^2$$

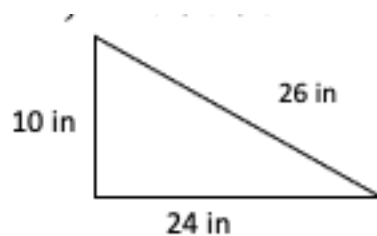
Volume of Prism

$$V = L \times W \times H$$

53-54. Find the perimeter and area. Label your answers

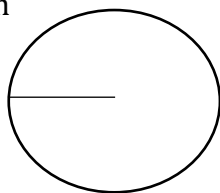


55-56. Find the perimeter and area. Label your answers.

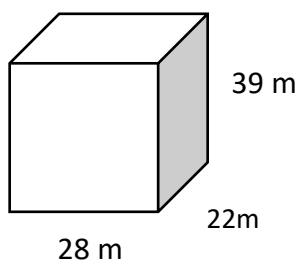


57-58. Find the circumference and area. Use 3.14 for π . Label your answers.

Radius = 3cm



59. Find the volume. Label your answers.



Critical Thinking - CALCULATOR! Show all work.

60. Farmer Jones has a vegetable garden that has a perimeter of 150 feet. The length of the garden is 45 feet. Find the area of the garden.

61. Your Dad ordered pizzas for Varsity. 9 large plain pizzas cost \$139.50. How much would 5 large plain pizzas cost?

62. Diego want to arrive at school no later than 7:40 AM. It takes Diego 35 minutes to shower and dress and 15 minutes to eat breakfast. It takes at least 25 minutes to get to school. What time should Diego plan to get out of bed?

63. There are 32 players in a single-elimination chess tournament. That is, a player who loses once is eliminated. Assuming there are no ties allowed, how many games must be played to determine a champion?

64. You are starting a lawn business. You see that Home Depot has a John Deere Tractor that sells for \$3,200. There is going to be a 20% off sale on Labor Day Weekend. How much will this tractor cost if you buy it on sale including a sales tax of 7%. (Tax is determined by the sale price not the original price.)

ACT/SAT PRACTICE - CALCULATOR!

65. Rachel sells homemade holiday cards at a craft fair. The total cost of supplies and the booth rental is \$150. She sells n cards for \$3 each. Is she makes a profit, which of the following inequalities includes all possible values of n ?

- a) $n + 150 > 0$ b) $3n - 150 > 0$
c) $n - 150 < 0$ d) $3n - 150 < 0$

66. If $5x + 6 = 10$, what is the value of $10x + 3$?

- a) 4 b) 9 c) 11 d) 20

67. A quality control manager at a factory selects 7 lightbulbs at random for inspection out of every 400 lightbulbs produced. At this rate, how many lightbulbs will be inspected if the factory produces 20,000 lightbulbs?

- a) 300 b) 350 c) 400 d) 450

68. In one semester, Doug and Laura spent a combined 250 hours in the tutoring lab. If Doug spent 40 more hours in the lab than Laura did, how many hours did Laura spend in the lab?

- a) 145 b) 105 c) 135 d) 150

69. Riley walks 25 meters in 13.7 seconds. If she walks at this same rate, which of the following is closest to the distance she will walk in 4 minutes?

- a) 150 meters b) 450 meters c) 700 meters d) 1,400 meters

70. A pet sitter knows that her client's five-digit alarm code contains the digits 2, 3, 1, 7 and 8. She cannot remember the order of the first four digits, but she knows that the last digit is 7. No digit is repeated. If she randomly guesses the order of the first four digits, what is the probability that she enters the correct alarm code on her first attempt.

- a) $\frac{1}{5}$ b) $\frac{1}{6}$ c) $\frac{1}{24}$ d) $\frac{1}{120}$