

Name _____

2021 Summer Packet - Incoming 9th Graders



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Mathematics Department
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INSTRUCTIONS:

- * Complete the entire packet without a calculator.
- * Make sure to show all your work.
- * You may use your notes from previous math courses to help you complete the packet.



RESOURCES:

<https://www.khanacademy.org/>

<https://www.mathsisfun.com/>

<https://artofproblemsolving.com/videos/prealgebra>

<http://patrickjmt.com/>

GRADING:

- * On the first day of school, the teacher will check for completion/effort of the packet.
- * **This will be weighted at 50%**
- * The teacher will then review the packet with the students.
- * Upon completion of the review, the students will be given an assessment based on the topics covered in the summer packet.
- * **This will be weighted at 50%**
- * **The two weighted scores combined will count as one project.**

ENJOY YOUR SUMMER!
WE ARE LOOKING FORWARD TO SEEING YOU IN SEPTEMBER!!!

2021 Algebra I - Summer Packet

A. ORDER OF OPERATION (PEMDAS) - Simplify the numerical expressions below.



1. $5 + 15 \div 3 \times 4^2$

5. $(2 \cdot 2 + 3)^2 - (4 + 3) \cdot 5$

2. $24 \div (5 - 3)^3$

6. $2(4^2 + 5)$

3. $59 - (5 + 6^2)$

7. $(6 + 4)^2 + (11 + 10 \div 2)$

4. $2[32 \div (1 + 7)]$

8. $4(12 \times 6 - 4^2) + 9$

B. EVALUATE EXPRESSIONS - Evaluate each expression.



1. $a^2 - (b^3 - 4c)$, if $a = 8$, $b = 5$, and $c = 3$.

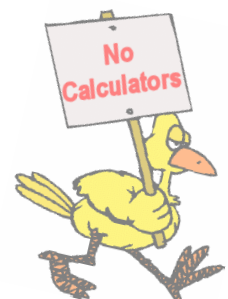
2. $2r + st^2 - u$, if $r = 4$, $s = 6$, $t = 3$, and $u = 12$.

3. $\frac{x^2 - 1}{4y^2}$, if $x = 9$, and $y = 2$.

4. $\frac{2u + s^2}{r + 2t}$, if $r = 4$, $s = 6$, $t = 3$, and $u = 12$.

5. $-2x^2y$, if $x = 4$ and $y = -3$.

6. $bc + 12.3$, if $a = 10$, $b = 9$, and $c = 4$.



2021 Algebra I - Summer Packet

C. ADD AND SUBTRACT REAL NUMBERS - Find each sum or difference.



1. $-63 + 57$

4. $-11.4 + (3.8)$

7. $-\frac{4}{9} + 1\frac{4}{5}$

2. $-21 - (-46)$

5. $-7 - (-7)$

8. $10\frac{1}{9} - 9\frac{3}{4}$

3. $4.5 + (-10.2)$

6. $\frac{3}{2} - \frac{9}{7}$

9. $4\frac{10}{12} + 6\frac{5}{8}$

D. MULTIPLY AND DIVIDE REAL NUMBERS - Find each product or quotient.



1. $-24 \div 3$

5. $(24)(8.8)$

2. $0.42 \div 0.07$

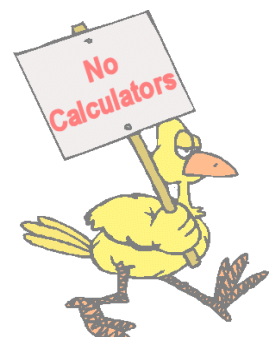
6. $4\frac{4}{5} \times 4\frac{1}{3}$

3. $3\frac{2}{7} \div 1\frac{1}{4}$

7. $6\frac{1}{2} \div 2\frac{2}{3}$

4. $(-1)\left(-\frac{8}{7}\right)$

8. $\left(\frac{-14}{-7}\right) \times \frac{1}{4}$



2021 Algebra I - Summer Packet

E. EVALUATING POWERS - Evaluate each of the following.



In the power 10^2 the base is _____, and the exponent is _____.

1. 6^3

6. $(-2)^5$

2. -4^2

7. 1^7

3. $(-4)^2$

8. $(-\frac{3}{5})^3$

4. 3.2^2

9. $(-\frac{1}{4})^3$

5. -2^5

10. $(\frac{2}{7})^2$

F. PRIME FACTORIZATION - Find the prime factorization for each number.



1. 40

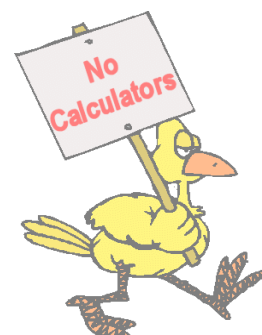
4. 30

2. 36

5. 150

3. 56

6. 310



2021 Algebra I - Summer Packet

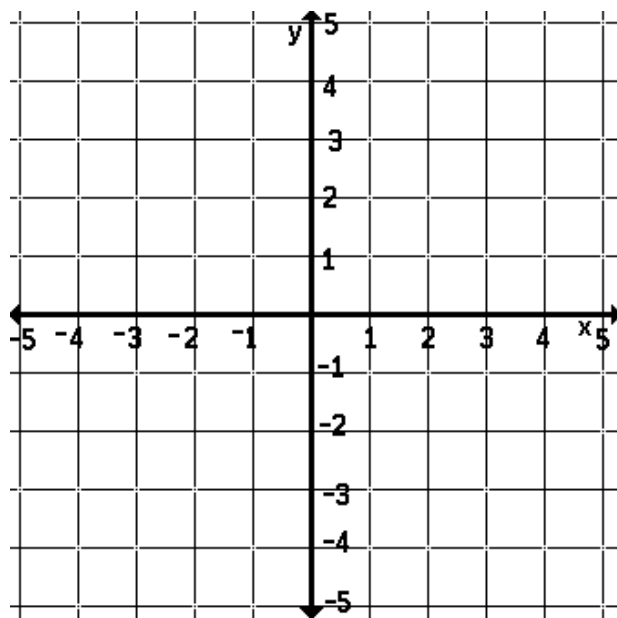
G. PRIME & COMPOSITE NUMBERS - Determine if the number is prime or composite.



1. List all the factors for the number 4.
Is 4 a prime or composite number?
2. List all the factors for the number 11.
Is 11 a prime or composite number?
3. List all the factors for the number 16.
Is 16 a prime or composite number?
4. List all the factors for the number 23.
Is 23 a prime or composite number?

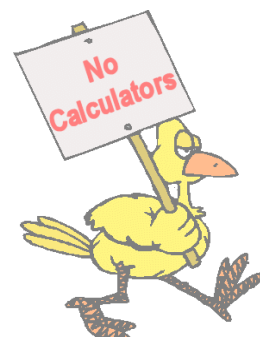
H. GRAPH POINTS ON A PLANE - Plot and label each point on the coordinate plane.

1. **A** (2, 4)
2. **B** (0, -3)
3. **C** (5, 0)
4. **D** (-1, -2)
5. **E** (-4, 3)



I. MULTIPLICATIVE INVERSE - Find the multiplicative inverse (reciprocal) of each number.

1. 17
2. $-\frac{1}{3}$
3. $-\frac{3}{8}$
4. $5\frac{2}{3}$
5. -1



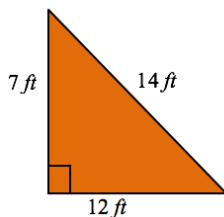
J. PERIMETER AND AREA - Find the perimeter and area of each figure.



1. Triangle

Perimeter = _____

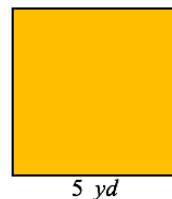
Area = _____



3. Square

Perimeter = _____

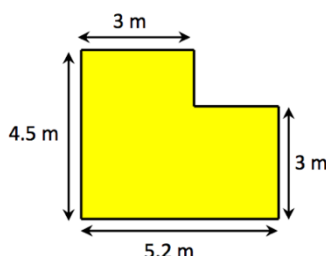
Area = _____



2. Irregular Figure

Perimeter = _____

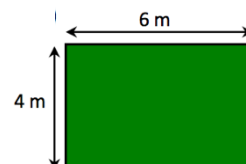
Area = _____



4. Rectangle

Perimeter = _____

Area = _____



K. PERFECT SQUARES - Find the square of the 1st 25 positive integers.



- | | | | | |
|---------|----------|----------|----------|----------|
| $1^2 =$ | $6^2 =$ | $11^2 =$ | $16^2 =$ | $21^2 =$ |
| $2^2 =$ | $7^2 =$ | $12^2 =$ | $17^2 =$ | $22^2 =$ |
| $3^2 =$ | $8^2 =$ | $13^2 =$ | $18^2 =$ | $23^2 =$ |
| $4^2 =$ | $9^2 =$ | $14^2 =$ | $19^2 =$ | $24^2 =$ |
| $5^2 =$ | $10^2 =$ | $15^2 =$ | $20^2 =$ | $25^2 =$ |

L. ORDER NUMBERS LEAST TO GREATEST - Put the following in order of least to greatest.



- 7.835, 7.358, 7.35, 7.8
- $0.28, \frac{6}{19}, \frac{29}{104}, 0.27, \frac{7}{26}$
- $2, -\frac{3}{7}, 0.75, -\frac{3}{2}$

