

This summer math review packet contains work for students entering **Pre-Algebra** or **Algebra 1**. It includes basic Pre-Algebra and Algebra skills. It also contains some challenging equations to solve. Good luck on those... Feel free to use a calculator. Use the following tips to help you:

- 1) When doing fractions in a calculator that *doesn't* do fractions, be careful. Enter fractions using the ÷ key to represent the fraction bar.

Example: For $4\frac{1}{3}$ type

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (| 4 | + | (| 1 | ÷ | 3 |) |) |
|---|---|---|---|---|---|---|---|---|

.

- 2) When most students are asked to use the Distributive Property, they respond with “Huh?” or a blank stare. The Distributive Property is shown below.

$$\begin{aligned}
 3 \times (7 + 5) &= (3 \times 7) + (3 \times 5) \\
 &= 21 + 15 \\
 &= 36
 \end{aligned}$$

$$\begin{aligned}
 4 \times (6 - 3) &= (4 \times 6) - (4 \times 3) \\
 &= 24 - 12 \\
 &= 12
 \end{aligned}$$

- 3) Remember, to solve equations use the “opposite operation”. Look at the examples.

The equation involves adding, so to solve you must do the opposite operations, subtracting.

$$\begin{aligned}
 x + 5 &= 10 \\
 x + 5 - 5 &= 10 - 5 \\
 x &= 5
 \end{aligned}$$

This is a two-step equation. First, so must undo the adding or subtracting. In this case, we undo the subtraction with addition. Second, we need to undo either multiplication or division. In this case, we need to undo the multiplication with division

$$\begin{aligned}
 2y - 6 &= 12 \\
 2y - 6 + 6 &= 12 + 6 \\
 2y &= 18 \\
 \frac{2y}{2} &= \frac{18}{2} \\
 y &= 9
 \end{aligned}$$

The equation involves dividing, so to solve you must multiply. In Algebra, a fraction bar is usually used to show division.

$$\begin{aligned}
 \frac{z}{5} &= 15 \\
 \frac{z}{5} \cdot 5 &= 15 \cdot 5 \\
 z &= 75
 \end{aligned}$$

Bring this packet with you to the first class in the fall. Remember, this work reviews math concepts learned during the past school year. It is designed to give you a head start when school resumes in the fall.

Have a great summer!

Sincerely,

Mr. Little

Study the box below. Find each absolute value. Write the answer on the line provided.

Rule:

The absolute value of a number is its distance from 0. The following symbol is used with absolute value: $| |$.

Examples:

$| -9 | = 9$ -9 is 9 places from 0, so its absolute value is 9.

$| 23 | = 23$ 23 is 23 places from 0, so its absolute value is 23.

1. $| -5 | =$ _____

3. $| -10 | =$ _____

5. $| 31 | =$ _____

2. $| 8 | =$ _____

4. $| 15 | =$ _____

6. $| -7 | =$ _____

Study the box below. Find each sum. Write the answer on the line provided.

Rules:

The sum of 2 positive integers is positive.

The sum of 2 negative integers is negative.

When 1 integer is positive and 1 integer is negative, subtract their absolute values and use the sign of the greater absolute value.

Examples:

$8 + 15 = 23$

$-4 + -9 = -13$

$-9 + 7 =$

$| -9 | - | 7 | =$

$$\begin{array}{c} \downarrow \quad \downarrow \\ 9 - 7 = 2 \end{array}$$

Give 2 a negative value.

Therefore, $-9 + 7 = -2$.

7. $-9 + 15 =$ _____

10. $(-17) + (-5) =$ _____

13. $0 + (-22) =$ _____

8. $24 + 7 =$ _____

11. $-20 + 15 =$ _____

14. $-40 + 21 =$ _____

9. $(-12) + (-19) =$ _____

12. $-8 + 2 =$ _____

15. $17 + (-8) =$ _____

Study the box below. Compare using "<," ">," or "=" Write the answer in the box provided.

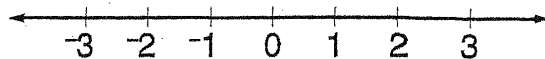
Rule:

You can use a number line to compare integers. The integer that is farther to the right on the number line has the greater value.

Example:

$$3 \boxed{>} -3$$

3 is farther to the right, so $3 > -3$.



1. $-8 \boxed{} -18$

5. $-68 \boxed{} -687$

9. $2 \boxed{} -2$

2. $-2 \boxed{} -7$

6. $-13 \boxed{} -131$

10. $-54 \boxed{} -45$

3. $-7 \boxed{} -6$

7. $-8 \boxed{} -8$

11. $-27 \boxed{} -28$

4. $-50 \boxed{} 50$

8. $-73 \boxed{} 3$

12. $-15 \boxed{} -13$

Order the sets of numbers from least to greatest. Write the answer on the line provided.

13. $-3, -7, 3, 0, -8, -4$

14. $2, -9, 3, 9, -3$

15. $25, -25, 30, -30, -40$

16. $3, -10, -77, -92, 42, 19$

17. $40, -40, -10, 10, 0, 15$

18. $-125, 125, 130, -135, 140$

Total Problems:

Total Correct:

Score:

Study the box below. Find each difference. Write the answer on the line provided.

| Rule: | Examples: | | |
|--|------------------------------|---------------------------------|---------------------------------|
| To subtract integers, add the opposite. | $10 - (-7)$ $10 + 7 = 17$ | $-14 - 20$ $-14 + -20 = -34$ | $-21 - (-9)$ $-21 + 9 = -12$ |

1. $5 - (-16) =$ _____

2. $-7 - 8 =$ _____

3. $8 - (-30) =$ _____

4. $7 - 14 =$ _____

5. $45 - (-20) =$ _____

6. $2 - 10 =$ _____

7. $11 - 13 =$ _____

8. $64 - (-8) =$ _____

9. $-13 - 15 =$ _____

10. $-4 - (-6) =$ _____

11. $-13 - -57 =$ _____

12. $5 - (-55) =$ _____

13. $20 - (-20) =$ _____

14. $16 - (-4) =$ _____

15. $-68 - (-68) =$ _____

16. $-40 - 25 =$ _____

17. $2 - 76 =$ _____

18. $5 - (-13) =$ _____

19. $-17 - (-17) =$ _____

20. $32 - 100 =$ _____

21. $-7 - (-20) =$ _____

22. $24 - (-22) =$ _____

Study the box below. Find each product. Write the answer on the line provided.

Rule:

When the signs are the same (both positive or both negative), the answer will be positive.

When the signs are different (1 positive and 1 negative), the answer will be negative.

Examples:

$$-4(-8) = 32 \quad 6 \times 7 = 42$$

$$5(-8) = -40 \quad -9(10) = -90$$

1. $9(-3) =$ _____

2. $100(12) =$ _____

3. $13(-9) =$ _____

4. $-7(20) =$ _____

5. $8(-11) =$ _____

6. $12(-5) =$ _____

7. $(-9)(-4) =$ _____

8. $6(30) =$ _____

9. $(-50)(3) =$ _____

10. $-7(-14) =$ _____

11. $-5(60) =$ _____

12. $4(-40) =$ _____

13. $-16(6) =$ _____

14. $(-23)(-5) =$ _____

15. $8(-25) =$ _____

16. $(-15)(-9) =$ _____

17. $-7(0) =$ _____

18. $-5(2)(3) =$ _____

19. $-1(-2)(-8) =$ _____

20. $6(-2)(4) =$ _____

21. $2(7)(-5) =$ _____

22. $-3(4)(6) =$ _____

23. $-4(-8)(2) =$ _____

24. $(-8)(-10)(5) =$ _____

25. $(-2)^2 =$ _____

26. $(-2)^3 =$ _____

27. $(-2)^4 =$ _____

Total Problems:

Total Correct:

Score:

Study the box below. Find each quotient. Write the answer on the line provided.

Rule:

When the signs are the same (both positive or both negative), the answer will be positive.

When the signs are different (1 positive and 1 negative), the answer will be negative.

Examples:

$$-49 \div (-7) = 7$$

$$24 \div 3 = 8$$

$$-20 \div 4 = -5$$

$$64 \div (-8) = -8$$

- | | | |
|------------------------------|------------------------------|-------------------------------|
| 1. $60 \div (-15) =$ _____ | 11. $-120 \div (-3) =$ _____ | 21. $-196 \div (-49) =$ _____ |
| 2. $-350 \div 35 =$ _____ | 12. $-150 \div 25 =$ _____ | 22. $144 \div (-12) =$ _____ |
| 3. $-42 \div (-6) =$ _____ | 13. $32 \div (-16) =$ _____ | 23. $-135 \div 15 =$ _____ |
| 4. $-100 \div (-10) =$ _____ | 14. $45 \div (-9) =$ _____ | 24. $-72 \div (-24) =$ _____ |
| 5. $-68 \div 4 =$ _____ | 15. $-33 \div (-3) =$ _____ | 25. $0 \div -9 =$ _____ |
| 6. $84 \div (-12) =$ _____ | 16. $-48 \div 12 =$ _____ | 26. $-420 \div (-60) =$ _____ |
| 7. $58 \div (-2) =$ _____ | 17. $-66 \div (-11) =$ _____ | 27. $-85 \div 5 =$ _____ |
| 8. $-44 \div (-22) =$ _____ | 18. $-51 \div 3 =$ _____ | 28. $-132 \div (-11) =$ _____ |
| 9. $-56 \div 4 =$ _____ | 19. $72 \div (-6) =$ _____ | 29. $96 \div (-8) =$ _____ |
| 10. $65 \div (-1) =$ _____ | 20. $-25 \div (-25) =$ _____ | 30. $-140 \div (-2) =$ _____ |

Solve and check the following equations. Write the answer in the space provided.

1. $x - 14 = -38$

2. $y - 50 = -20$

3. $-20 = v + 26$

4. $-5x - 7 = 28$

5. $3(x - 5) = -27$

6. $\frac{x}{3} - 12 = -20$

7. $-3x - 5 = 13$

8. $5y = -35$

9. $\frac{y}{3} = -9$

10. $3(x - 2) = -9$

11. $3y + 6 = -3$

12. $2(h + 3) = -6$

13. $\frac{a}{2} + 4 = -10$

14. $-9x + 3 = 30$

15. $x + 150 = -125$

16. $\frac{m}{-6} = -13$

17. $-4x = 16$

18. $-2x + 58 = -8$

19. $-3x - 1 = -10$

20. $-30 = \frac{m}{5} - 15$

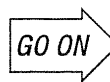
Beginning-of-Course Diagnostic Test

1. Multiply. 0.34×0.004
2. Multiply. 321×70
3. Subtract. $5\frac{3}{8} - 1\frac{5}{8}$
4. Divide. $3.2913 \div 9$
5. Estimate. $2\frac{9}{10} \cdot 2\frac{1}{7}$
6. Write a decimal for the given words.
thirteen and one hundred
thirteen ten-thousandths
7. Write the fraction in simplest form.
 $\frac{25}{70}$
8. Divide $1,341 \div 79$. Round to the
nearest hundredth.
9. Draw an angle of 75° .
10. Multiply. 1.23×4
11. Write the mixed number as an
improper fraction.
 $3\frac{2}{11}$
12. Write an integer for the situation.
8 steps up
13. Use $>$ or $<$ to compare the numbers.
13,254 13,524
14. Round to the place of the
underlined digit.
14.04721
15. Divide. $2.2778 \div 1.627$



Beginning-of-Course Diagnostic Test (continued)

16. Round to the place of the underlined digit.
3,219
17. Add. $15.623 + 7.3953$
18. Multiply. $4\frac{2}{5} \times 2\frac{1}{2}$
19. Write the decimals in order from least to greatest.
5.013; 5.103; 5.301; 5.310; 5.031
20. Divide. $6.2379 \div 0.01$
21. Divide. $1.92296 \div 0.52$
22. Estimate. $5\frac{1}{4} \div 1\frac{1}{8}$
23. Divide. $101.52 \div 16$
24. Add. $2\frac{2}{7} + 1\frac{6}{7}$
25. Divide. $3.41502 \div 3.46$
26. Multiply. 32.5×7
27. Round to the place of the underlined digit.
32,657
28. Draw an angle of 50° .
29. Divide. $0.85625 \div 0.685$
30. Use $>$, $<$, or $=$ to compare the decimals.
1.5234 15.234
31. Multiply. 67×92
32. Write an integer for the situation.
7 steps backward
33. Multiply. $3,625 \times 0.001$



Beginning-of-Course Diagnostic Test (continued)

34. Multiply. $3\frac{1}{3} \times 1\frac{2}{3}$

42. Write the improper fraction as a mixed number.

$$\frac{45}{7}$$

35. Round to the place of the underlined digit.

4.1234

43. Use $>$, $<$, or $=$ to compare the decimals.

2.16 2.160

36. Write the numbers from least to greatest.

33,457; 34,674; 33,687; 34,328; 32,963

44. Estimate. $1\frac{7}{8} + 3\frac{1}{6}$

37. Subtract. $12.932 - 3.392$

45. Divide. $3.41502 \div 3.46$

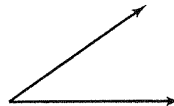
38. Divide. $0.0040761 \div 0.063$

46. Subtract. $32.589 - 15.0029$

39. Write the decimal in words.

4.032

47. Measure the angle. Then classify it as *acute*, *right*, or *obtuse*.

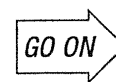


40. Multiply. 1.008×0.003

48. Divide. $0.567 \div 10$

41. Find the missing number.

$$\frac{11}{3} = \frac{\square}{39}$$



Beginning-of-Course Diagnostic Test (continued)

49. Divide. $671 \div 34$
Round to the nearest tenth.

50. Write the mixed number as an improper fraction.

$$5\frac{5}{16}$$

51. Round to the place of the underlined digit.
1,234,567

52. Divide. $57.18 \div 12$

53. Use $>$ or $<$ to compare the numbers.
1,206 121

54. Find the missing number.

$$\frac{6}{7} = \frac{18}{\square}$$

55. Divide. $\frac{8}{9} \div 1\frac{1}{3}$

56. Multiply. 34×458

57. Compare. Use $>$, $<$, or $=$ to compare the integers.

$$-12 \quad 12$$

58. Round to the place of the underlined digit.

$$8.00156$$

59. Add. $3\frac{2}{9} + 3\frac{1}{9}$

60. Write a decimal for the given words.
fifty-four hundred-thousandths

61. Multiply. 0.89×0.6

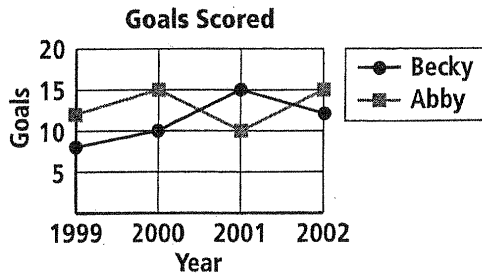
62. Divide. $5.6334 \div 1.23$

63. Multiply. 0.25×0.07

| |
|-----|
| END |
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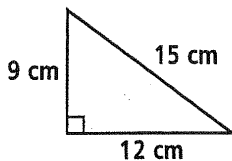
Beginning-of-Course Diagnostic Test

- The line graph shows the number of goals scored each year by Becky and Abby over their high school soccer careers. In which year did Becky and Abby together score the most goals?



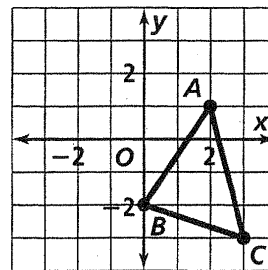
- Estimate the sum of \$14.30, \$143.08, and \$19.74 by rounding.
- Divide $\frac{2}{5} \div \frac{1}{8}$. Write the answer in simplest form.
- Paul, Steve, Robin, and Ryan all play different instruments. Their instruments are guitar, bass guitar, piano, and drums. Robin's instrument is not a string instrument. Paul does not play bass guitar or piano. Ryan's instrument has only four strings. Which instrument does each play?

- Find the perimeter.



- Write five equivalent fractions for $\frac{7}{8}$.
- Find three consecutive even integers whose sum is 180.

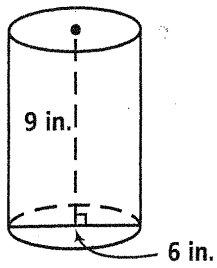
- Use a factor tree to write the prime factorization of 430.
- Write 3.04 as a percent.
- This week Lera withdrew \$150 from her checking account. She wrote a check for \$275, made a deposit of \$200, and then wrote another check for \$75. She now has \$185 in her account. How much did Lera have in her account at the beginning of the week?
- Find the GCF of 15 and 27.
- Write 3.1818... as a fraction in simplest form.
- Find a four digit number that is divisible by 3, 5, and 8.
- Graph the image of $\triangle ABC$ after a translation of 3 units left and 2 units up.



- Subtract $6\frac{3}{4} - 4\frac{11}{12}$. Write the answer in simplest form.
- Troy is writing a book of short stories. It is his goal to write one short story this month, two short stories next month, three short stories the following month, and so on for 13 more months. How many stories will he have written at the end of sixteen months?

Beginning-of-Course Diagnostic Test (continued)

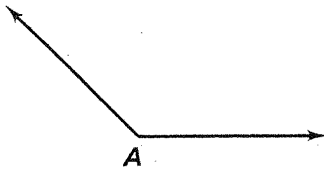
17. Find the volume of the following figure.



18. Find the LCM of 15 and 27.

19. Graph the triangle with vertices $A(-1, 3)$, $B(-3, -2)$, $C(0, -1)$. Then graph its image after a reflection over the y -axis.

20. Use a protractor to measure the angle and classify it as *acute*, *right*, *obtuse*, or *straight*.



21. Multiply $4\frac{2}{3} \cdot 5\frac{1}{6}$. Write the answer in simplest form.

22. Draw a line plot for the frequency table.

| | | | | | |
|-----------|---|---|----|----|----|
| Number | 8 | 9 | 10 | 11 | 12 |
| Frequency | 3 | 4 | 6 | 2 | 1 |

23. When seating guests at a round table, two arrangements are considered the same if each person has the same neighbor to the left and to the right in each arrangement. Find the number of unique arrangements when seating 2, 3, and 4 guests at a round table. Use these results and the fact that 24 unique arrangements are possible when seating 5 guests to find the number of unique arrangements when seating 6 guests.

24. Write 3624 in expanded form using exponents.

25. There are 20 guests at a party. If each person shakes hands with every other person exactly once, how many total handshakes will occur?

26. Below are the number of hours Grace spent reading during each week of her summer vacation. Make a box-and-whisker plot. Determine the median and mean number of hours Grace spent reading each week.

14 11 18 10 15 14 20 12 13 10 17

27. Write $6^2 \cdot 3^3$ in standard form.