

All problems listed below are prerequisite skills required for Algebra I. You will be quizzed on these Pre-Algebra skills during the first week of school. The packet will not be graded; however, you are responsible for the material. **The assessment will count as a grade in your first quarter average.** There may be some concepts that you do not remember. It is your responsibility to review by using the links provided below.

Operations with Integers

Adding and Subtracting Integers

<https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/core-algebra-foundations-negative-numbers/v/adding-and-subtracting-negative-number-examples>

Simplify the following.

$$1) -8 + 13 = \boxed{5}$$

$$2) -11 + 19 = \boxed{8}$$

$$3) 41 + (-63) = \boxed{-22}$$

$$4) -77 + (-46) = \boxed{-123}$$

$$5) -19 - 8 = \boxed{-27}$$

$$6) 9 - (-24) = \boxed{33}$$

$$7) 22 - 41 = \boxed{-19}$$

$$8) -58 - (-42) = \boxed{-16}$$

9) There was a 6° drop in temperature over the past hour. If it is 55° now, what was the temperature an hour ago?

$$\boxed{61^\circ}$$

10) It is -9° now. The temperature will drop 5° in two hours. What will the temperature be in two hours?

$$\boxed{-14^\circ}$$

Multiplying and Dividing Integers

<https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/core-algebra-foundations-negative-numbers/v/multiplying-positive-and-negative-numbers>

Simplify the following.

$$11) 5(18) = \boxed{90}$$

$$12) 8(22) = \boxed{176}$$

$$13) -12(15) = \boxed{-180}$$

$$14) -24(8) = \boxed{-192}$$

$$15) -47(-2) = \boxed{94}$$

$$16) 81(-4) = \boxed{-324}$$

$$17) -64 \div (-8) = \boxed{8}$$

$$18) -78 \div (13) = \boxed{-6}$$

Fractions

Simplifying Fractions (Writing Fractions in Lowest Terms)

<https://www.khanacademy.org/video/fractions-in-lowest-terms>

Reduce the following fractions.

$$19. \quad \frac{8}{24} = \boxed{\frac{1}{3}}$$

$$20. \quad \frac{-3}{-9} = \boxed{\frac{1}{3}}$$

$$21. \quad \frac{-15}{20} = \boxed{\frac{-3}{4}}$$

$$22. \quad \frac{35}{45} = \boxed{\frac{7}{9}}$$

Operations with Fractions

Add or subtract the following, and then simplify.

<https://www.khanacademy.org/math/pre-algebra/fractions-pre-algebra/fractions-unlike-denom-pre-alg/v/adding-and-subtracting-fractions>

$$23) \quad \frac{2}{5} + \frac{1}{5} = \boxed{\frac{3}{5}}$$

$$24) \quad \frac{2}{7} - \frac{1}{7} = \boxed{\frac{1}{7}}$$

$$25) \quad \frac{4}{3} + \frac{4}{3} = \boxed{\frac{8}{3}}$$

$$26) \quad \frac{5}{16} - \frac{4}{16} = \boxed{\frac{1}{16}}$$

$$27) \quad \frac{4}{9} - \frac{1}{9} = \frac{3}{9} = \boxed{\frac{1}{3}}$$

$$28) \quad \frac{7}{2} - \frac{4}{2} = \boxed{\frac{3}{2}}$$

$$29) \quad \frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \boxed{\frac{3}{4}}$$

$$30) \quad \frac{4}{3} + \frac{5}{9} = \frac{12}{9} + \frac{5}{9} \\ = \boxed{\frac{17}{9}}$$

$$31) \quad \frac{3}{2} + \frac{8}{16} \\ = \frac{3}{2} + \frac{1}{2} \\ = \frac{4}{2} \\ = \boxed{2}$$

$$32) \quad 1 - \frac{1}{19} \\ = \frac{19}{19} - \frac{1}{19} \\ = \boxed{\frac{18}{19}}$$

$$33) \quad \frac{3}{4} - \frac{2}{3} \\ = \frac{9}{12} - \frac{8}{12} \\ = \boxed{\frac{1}{12}}$$

$$34) \quad \frac{11}{12} - \frac{4}{15} \\ = \frac{165}{180} - \frac{48}{180} \\ = \boxed{\frac{117}{180}}$$

$$35) \quad \frac{94}{100} - \frac{11}{25} \\ = \frac{94}{100} - \frac{44}{100} \\ = \frac{50}{100} \\ = \boxed{\frac{1}{2}}$$

$$36) \quad -\frac{4}{11} + \frac{3}{5} \\ = -\frac{20}{55} + \frac{33}{55} \\ = \boxed{\frac{13}{55}}$$

$$37) \quad -\frac{4}{15} + \left(-\frac{9}{45}\right) \\ = -\frac{4}{15} - \frac{3}{15} \\ = \boxed{\frac{-7}{15}}$$

$$38) \quad 2\frac{1}{4} - 6\frac{1}{3} \\ = \frac{9}{4} - \frac{19}{3} \\ = \frac{27}{12} - \frac{76}{12} \\ = \boxed{\frac{-49}{12}}$$

Multiply or divide the following, and then simplify.

<https://www.khanacademy.org/math/arithmetic/fractions/multiplying-fractions/v/multiplying-fractions>

<https://www.khanacademy.org/math/arithmetic/fractions/div-fractions-fractions/v/another-dividing-fractions-example>

$$39) \frac{4}{5} \times \frac{3}{8} = \boxed{\frac{3}{10}}$$

$$40) \frac{5}{12} \times \frac{4}{9} = \boxed{\frac{5}{27}}$$

$$41) -\frac{3}{5} \times \frac{5}{6} = \boxed{-\frac{1}{2}}$$

$$42) -\frac{2}{5} \times \frac{6}{7} = \boxed{-\frac{12}{35}}$$

$$43) \frac{2}{3} \times \frac{1}{11} = \boxed{\frac{2}{33}}$$

$$44) \frac{-3}{2} \times \frac{-1}{3} = \boxed{\frac{1}{2}}$$

$$45) \frac{2}{11} \times \frac{110}{-17} = \boxed{-\frac{20}{17}}$$

$$46) \frac{6}{5} \times \frac{10}{12} = \boxed{1}$$

$$47) \frac{2}{3} \div \frac{1}{3} \\ = \frac{2}{3} \cdot \frac{3}{1} \\ = \boxed{2}$$

$$48) -\frac{16}{9} \div \frac{4}{9} \\ = -\frac{16}{9} \cdot \frac{9}{4} \\ = \boxed{-4}$$

$$49) \frac{3}{2} \div \frac{1}{2} \\ = \frac{3}{2} \cdot \frac{2}{1} \\ = \boxed{3}$$

$$50) \frac{16}{36} \div \frac{24}{60} \\ = \frac{16}{36} \cdot \frac{60}{24} \\ = \boxed{\frac{10}{9}}$$

$$51) -\frac{14}{32} \div \frac{12}{15} \\ = -\frac{14}{32} \cdot \frac{15}{12} \\ = \boxed{-\frac{35}{64}}$$

$$52) -7 \div \frac{3}{5} \\ = -\frac{7}{1} \cdot \frac{5}{3} = \boxed{-\frac{35}{3}}$$

$$53) -\frac{1}{3} \div 4 \\ = -\frac{1}{3} \cdot \frac{1}{4} = \boxed{-\frac{1}{12}}$$

$$54) \frac{-2}{8} \div \frac{-4}{2} \\ = -\frac{2}{8} \cdot -\frac{2}{4} \\ = \boxed{\frac{1}{8}}$$

Find the Greatest Common Factor

<https://www.khanacademy.org/math/pre-algebra/factors-multiples/greatest-common-divisor/v/greatest-common-divisor>

$$55) 42, 60 \quad \boxed{6}$$

$$56) 24, 42 \quad \boxed{6}$$

$$57) 27, 45 \quad \boxed{9}$$

$$58) 11, 21 \quad \boxed{1}$$

Find the Least Common Multiple

<https://www.khanacademy.org/math/pre-algebra/factors-multiples/least-common-multiple/v/least-common-multiple-exercise>

$$59) 27, 18 \quad \boxed{54}$$

$$60) 15, 18 \quad \boxed{90}$$

$$61) 9, 15 \quad \boxed{45}$$

$$62) 64, 48 \quad \boxed{192}$$

Algebraic Expressions

Simplify using the order of operations (PEMDAS).

<https://www.khanacademy.org/math/pre-algebra/pre-algebra-arith-prop/pre-algebra-order-of-operations/v/introduction-to-order-of-operations>

63) $32 + (10 \times 4)$ $32 + (10 \times 4)$

$$\boxed{1352}$$

64) $90 \div 3 + 10 \times 6$ $90 \div 3 + 10 \times 6$

$$\boxed{320}$$

65) $32 \div 210 - 8$ $32 \div 210 - 8$

$$\boxed{\frac{-248}{21}}$$

66) $20 - 2 + 15 \div 3$ $20 - 2 + 15 \div 3$

$$\boxed{\frac{1347}{64}}$$

67) $18 + [(12 - 2) \div 5]$ $18 + [(12 - 2) \div 5]$

$$\boxed{56}$$

68) $25 \div 5 + 6 \times 6$ $25 \div 5 + 6 \times 6$

$$\boxed{791}$$

69) $7 + [(20 - 4) \div 4]$ $7 + [(20 - 4) \div 4]$

$$\boxed{39}$$

70) $13 - [(4 - 2) \times (2 + 2)]$

$$\boxed{5}$$

Simplify the expressions by using the distributive property or combining like terms.

<https://www.khanacademy.org/math/algebra/introduction-to-algebra/alg1-manipulating-expressions/v/combining-like-terms>

71) $7y + 5y - 5y$

$$= \boxed{7y}$$

72) $3m + 4n - 6n$

$$= \boxed{3m - 2n}$$

73) $15f - 5 + 2f$

$$= \boxed{17f - 5}$$

74) $10t - 9t + 6u + 4u$

$$= \boxed{1t + 10u}$$

or $\boxed{t + 10u}$

75) $2(x + 3)$

$$= \boxed{2x + 6}$$

76) $-(4 - x)$

$$= \boxed{-4 + x}$$

or $\boxed{x - 4}$

77) $\frac{2}{3}(3x + 9)$

$$= \boxed{2x + 6}$$

78) $5(2x - 4) + (x - 7)$

$$= \boxed{11x - 27}$$

Evaluating Expressions

<https://www.khanacademy.org/math/algebra/introduction-to-algebra/alg1-intro-to-variables/v/variables-and-expressions-1>

Evaluate each expression given that $x = 2$, $y = 3$, $z = 4$.

79) $x + 6 = 8$

80) $y^2 = 9$

81) $5z - 3 = 17$

Algebraic Equations

<https://www.khanacademy.org/math/algebra/one-variable-linear-equations>

One Step Equations

Solve each equation for the missing variable.

82) $4 + b = 30$

$b = 26$

83) $10 + c = 25$

$c = 15$

84) $x - 60 = 20$

$x = 80$

85) $g - 16 = 4$

$g = 20$

86) $x - 15 = -20$

$x = -5$

87) $w + 14 = 10$

$w = -4$

88) $3h = 27$

$h = 9$

89) $\frac{j}{3} = 4$

$j = 12$

90) $6p = 30$

$p = 5$

91) $\frac{n}{10} = 40$

$n = 400$

92) $\frac{h}{4} = 15$

$h = 60$

93) $9s = 81$

$s = 9$

Two and Multi- Step Equations

Solve each equation for the missing variable.

$$94) 6 = \frac{a}{4} + 2$$

$$a = 16$$

$$95) -6 + \frac{x}{4} = -5$$

$$x = 4$$

$$96) 9x - 7 = -7$$

$$x = 0$$

$$97) 0 = 4 + \frac{n}{5}$$

$$n = -20$$

$$98) \frac{v+9}{3} = 8$$

$$v = 15$$

$$99) 2(n + 5) = -8$$

$$n = -9$$

Plot Points on the Coordinate Plane

<https://www.khanacademy.org/math/basic-geo/basic-geo-coord-plane/coordinate-plane-4-quad/v/plot-ordered-pairs>

100) Plot and label each point.

A(5, 10)

B(1, 9)

C(-6, 8)

D(9, 0)

E(-6, 0)

F(-8, -4)

G(5, 0)

H(-1, -1)

I(-8, -1)

J(7, 10)

K(0, 4)

L(-1, 10)

M(-6, -6)

N(0, -10)

O(-4, -9)

P(4, 1)

Q(7, -9)

R(0, 0)

