Chapter 1A Student Success Sheet (SSS)

Tools of Algebra

Olathe East High School – Intermediate Algebra

Name:_____

Hour: _____

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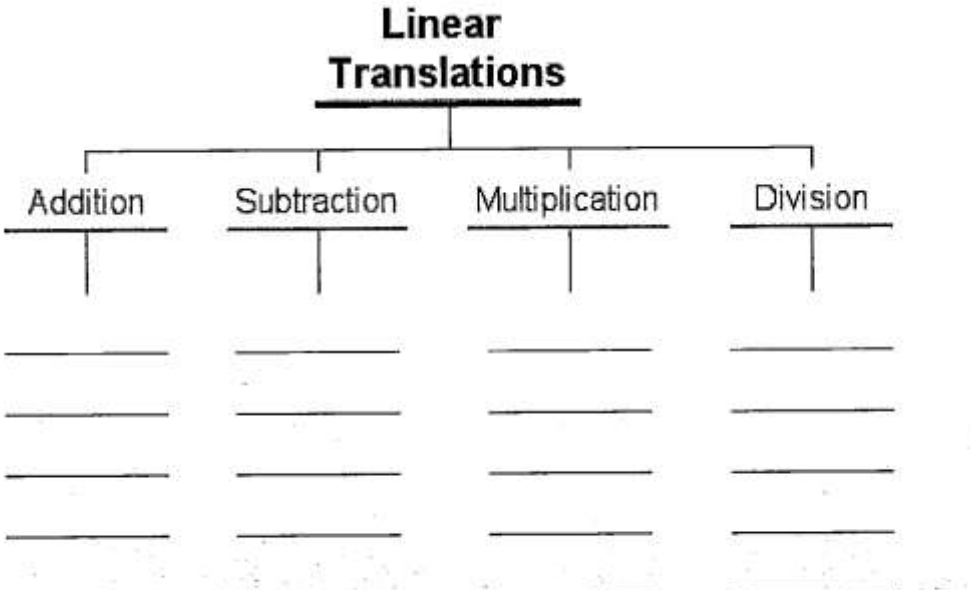
Success comes from knowing that you did your best to become the best that you are capable of becoming.

James Wooden

Concept #	What we will be learning…	Videos
1	Linear translations and basic vocabulary	1
2	Adding real numbers (including fractions)	2
3	Subtracting real numbers (including fractions)	2
4	Multiplying real numbers (including fractions)	2
5	Dividing real numbers (including fractions)	2

#1 Linear translations and basic vocabulary

Using the list from the video, put the words in the correct columns.



Write each as an algebraic expression.

1) v increased by 7

2) the product of r and 8

3) 5 less than 16

4) 5 squared

5) 6 more than w

6) the qotient of 18 and 2

7) twice x

8) the sum of 11 and w

9) 5 cubed

10) half of 16

11) 24 decreased by a number

12) the prodcut of 5 and a number

13) 7 increased by 8

14) 15 less than 20

15) twice 5

16) n more than 5

17) the quotient of 50 and 5

18) d cubed

19) the sum of p and 5

20) 19 decreased by a number

#2 Adding Real Numbers (including fractions)

Same Signs Add & Keep
Different Signs Subtract
Keep the Sign of the Bigger One
And Then You'll Be Exact!

21) $3 + 1$

22) $6 + 3$

23) $4 + 7$

24) $7 + 3$

25) $1 + 5$

26) $8 + 2$

27) $5 + 8$

28) $2 + 4$

29) $(-4) + (-4)$

30) $(-2) + (-1)$

31) $(-3) + (-8)$

32) $(-5) + (-1)$

33) $(-5) + (-3)$

34) $(-8) + (-6)$

35) $(-1) + (-2)$

36) $(-4) + (-1)$

37) $1 + (-7)$

38) $4 + (-3)$

39) $8 + (-8)$

40) $(-3) + 1$

41) $(-6) + 2$

42) $3 + (-1)$

43) $5 + (-7)$

44) $(-3) + 7$

If you have more than just two numbers, take it one pair at a time.

45) $4 + (-8) + 1$

$-4 \quad +1$

$= -3$

46) $6 + (-5) + 4$

47) $(-8) + 7 + (-7)$

48) $(-5) + (-6) + 7$

49) $(-1) + (-1) + (-5)$

50) $2 + (-6) + 2$

51) $5 + (-1) + (-3)$

52) $(-5) + (-2) + (-8)$

53) $(-6) + (-1) + (-5)$

54) $(-2) + 3 + 5$

55) $8 + 2 + (-7)$

56) $(-8) + (-1) + (-2)$

Converting from Mixed Numbers to Improper Fractions…

57) $\left(-\frac{2}{5}\right)+1\frac{2}{5}$

$=-\frac{2}{5}+\frac{7}{5}$

$=\frac{5}{5}$

$=1$

58) $\left(-3\frac{1}{2}\right)+2\frac{2}{3}$

$=-\frac{7}{2}+\frac{8}{3}$ → *need common denominator of* 6!

$=-\frac{7}{2}\cdot\frac{3}{3}+\frac{8}{3}\cdot\frac{2}{2}$

$=-\frac{21}{6}+\frac{16}{6}$

$=-\frac{5}{6}$

59) $\left(-1\frac{1}{2}\right)+\left(-1\frac{2}{3}\right)$

60) $\frac{1}{2}+\left(-3\frac{1}{2}\right)$

61) $(-2)+\left(-3\frac{3}{5}\right)$

62) $\left(-\frac{3}{5}\right)+\left(-3\frac{1}{2}\right)$

63) $\left(-2\frac{2}{5}\right)+\left(-\frac{1}{3}\right)$

64) $\left(-1\frac{1}{3}\right)+\left(-\frac{9}{5}\right)$

65) $\left(-3\frac{1}{4}\right)+\left(-3\frac{3}{4}\right)$

66) $\frac{4}{3}+\left(-2\frac{1}{5}\right)$

67) $\frac{2}{3}+\left(-2\frac{2}{3}\right)$

68) $\left(-\frac{5}{3}\right)+2\frac{2}{3}$

#3 Subtracting Real Numbers (including fractions)

Anytime you have _____ _____ right next to each other, they become a _____.

69) $2 - 7$

70) $(-1) - (-6)$

71) $6 - (-6)$

72) $(-8) - (-1)$

73) $(-5) - (-6)$

74) $5 - (-2)$

75) $8 - 3$

76) $(-2) - 2$

77) $1 - 7$

78) $4 - (-6)$

79) $(-6) - (-6)$

80) $(-3) - (-2)$

If you have more than two numbers, take it one pair at a time.

81) $4 - (-2) - 4$

$= (4 + 2) - 4$

$= 6 \quad -4$

$= 2$

82) $(-6) - (-1) - 7$

83) $7 - 3 - 2$

84) $(-4) - 2 - 4$

85) $(-7) - (-2) - 7$

86) $7 - (-8) - 5$

87) $3 - 2 - 6$

88) $6 - 7 - (-6)$

89) $(-4) - 7 - (-3)$

90) $(-1) - (-6) - 2$

91) $(-7) - (-6) - 3$

92) $2 - (-2) - (-1)$

93) $(-3) - (-1) - 6 - (-4)$

94) $4 - 4 - 5 - 8$

95) $4 - (-8) - 1 - (-4)$

96) $7 - 4 - 6 - (-4)$

Convert all to improper fractions first! Then get common denominators if necessary.

97) $\left(-1\frac{1}{2}\right)-\left(-\frac{3}{5}\right)$

98) $1\frac{1}{5}-1\frac{1}{3}$

99) $1\frac{1}{2}-\left(-2\frac{1}{5}\right)$

100) $\frac{1}{2}-1\frac{2}{5}$

101) $\left(-1\frac{2}{3}\right)-\frac{2}{3}$

102) $\left(-\frac{2}{3}\right)-\frac{1}{2}$

103) $\frac{1}{3}-\frac{7}{4}$

104) $\left(-1\frac{2}{5}\right)-\left(-3\frac{1}{5}\right)$

#4 Multiplying Real Numbers (including fractions)

Identity property of multiplication
Ex: ____ · ____ = ____ AND ____ · ____ = ____

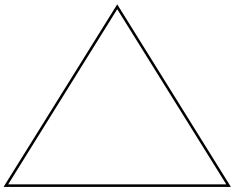
Multiplication property of zero
Ex: ____ · ____ = ____ AND ____ · ____ = ____

Multiplication property of -1
Ex: ____ · ____ = ____ AND ____ · ____ = ____

Inverse property of multiplication
Ex: ____ · ____ = ____ AND ____ · ____ = ____

Multiplying numbers with the same sign…
…will always give you a _____ answer.

Multiplying numbers with different signs…
…will always give you a _____ answer.



105) $(-8)(10)$

106) $(-2)(-4)$

107) $(-3)(-7)$

108) $(7)(-1)$

109) $(-10)(-6)$

110) $(-7)(-9)$

111) $(4)(-8)$

112) $(-3)(-9)$

If you have more than two numbers, take it one pair at a time.

113) $(3)(-7)(5)$

$= (-21)(5)$

$= -105$

114) $(6)(10)(-10)$

115) $(9)(-1)(4)$

116) $(-5)(-8)(3)$

117) $(-8)(-5)(10)$

118) $(-2)(10)(-10)$

119) $-3 \cdot 3 \cdot -4$

120) $8 \cdot -5 \cdot -2$

121) $5 \cdot -4 \cdot 9$

122) $-10 \cdot 8 \cdot -3$

123) $-7 \cdot -4 \cdot -7$

124) $-3 \cdot 5 \cdot 8$

Convert all to improper fractions first! Then, just _____ _____ across!

Multiplying Fractions
Is Very Easy!
All You Gotta Do Is
Multiply Straight Across!

125) $-1\frac{5}{8}\cdot-\frac{3}{5}$

$=-\frac{13}{8}\cdot-\frac{3}{5}$

$=+\frac{39}{40}$

126) $2\frac{5}{9}\cdot-\frac{1}{6}$

$=\frac{23}{9}\cdot-\frac{1}{6}$

$=-\frac{23}{54}$

127) $-\frac{6}{5}\cdot\frac{2}{5}$

128) $2\frac{1}{4}\cdot-\frac{9}{5}$

129) $-5\frac{1}{5}\cdot-\frac{4}{3}$

130) $1\frac{1}{10}\cdot-\frac{5}{4}$

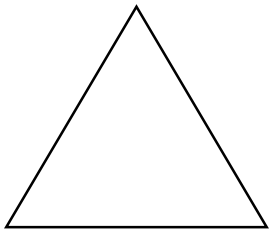
131) $-1\frac{8}{9}\cdot-\frac{1}{2}$

132) $-\frac{1}{2}\cdot-\frac{7}{4}$

#5 Dividing Real Numbers (including fractions)

Dividing numbers with the same sign…
…will always give you a _____ answer.
Ex: ___ ÷ ____ = ____ AND ____ ÷ ____ = ____

Dividing numbers with different signs…
…will always give you a _____ answer.
Ex: ___ ÷ ____ = ____ AND ____ ÷ ____ = ____



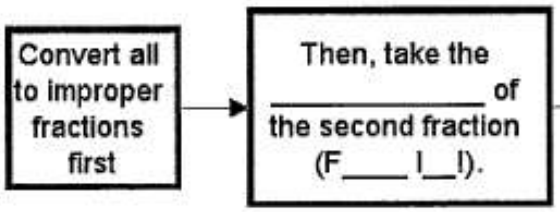
133) $\frac{-14}{2}$ 134) $\frac{-6}{3}$ 135) $\frac{-45}{-9}$ 136) $\frac{-42}{-6}$

137) $\frac{48}{6}$ 138) $\frac{72}{-8}$ 139) $\frac{30}{-3}$ 140) $\frac{-16}{4}$

141) $\frac{40}{10}$ 142) $\frac{-6}{-1}$ 143) $\frac{-35}{7}$ 144) $\frac{90}{10}$

145) $\frac{-50}{-5}$ 146) $\frac{6}{2}$ 147) $\frac{-56}{7}$ 148) $\frac{16}{-8}$

149) $\frac{-45}{5}$ 150) $\frac{72}{8}$ 151) $\frac{24}{-4}$ 152) $\frac{9}{-1}$



What about dividing?
It's just as simple
Take the second fraction
And flip it upside down
That's called finding
The reciprocal
Then all you gotta do is
Multiply Straight Across

153) $\frac{\frac{1}{4}}{-\frac{3}{4}}$

$= \frac{1}{4} \div -\frac{3}{4}$
$= \frac{1}{4} \cdot -\frac{4}{3}$
$= -\frac{4}{12}\ (reduce) \div \frac{4}{4}$
$= -\frac{1}{3}$

154) $\frac{-\frac{2}{5}}{-1\frac{4}{5}}$

$= -\frac{2}{5} \div -\frac{9}{5}$
$= -\frac{2}{5} \cdot -\frac{5}{9}$
$= +\frac{10}{45}\ (reduce) \div \frac{5}{5}$
$= +\frac{2}{9}$

155) $\frac{\frac{2}{3}}{-\frac{6}{7}}$ 156) $\frac{\frac{7}{4}}{-\frac{5}{8}}$ 157) $\frac{-3\frac{3}{4}}{\frac{2}{7}}$

158) $\frac{2\frac{2}{3}}{-2\frac{1}{4}}$ 159) $\frac{-\frac{8}{7}}{\frac{10}{7}}$ 160) $\frac{-1\frac{3}{4}}{1\frac{1}{6}}$