

# Chapter 1A Student Success Sheet (SSS)

## *Tools of Algebra*

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Olathe East High School – Intermediate Algebra

Name: \_\_\_\_\_

Hour: \_\_\_\_\_

**Need Help? Support is available!**

[www.srushingoe.weebly.com](http://www.srushingoe.weebly.com)

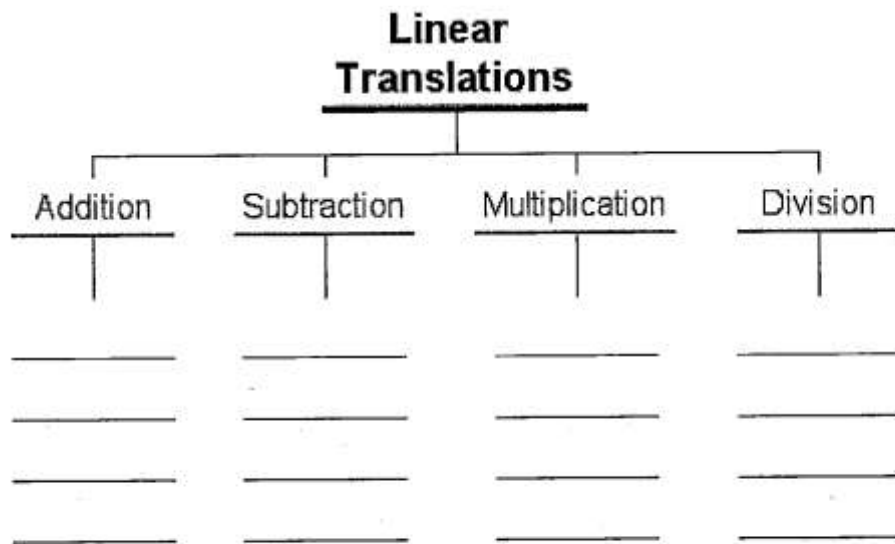
Success comes from knowing that you did your best to become the best that you are capable of becoming.

James Wooden

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

#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 quotient 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 product 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)  $(-3) + 1$

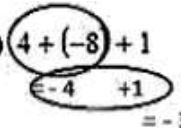
41)  $(-6) + 2$

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)  $4 + (-8) + 1$   
  
 $= -3$

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...

$$\begin{aligned}
 57) \quad & \left(-\frac{2}{5}\right) + 1\frac{2}{5} \\
 & = -\frac{2}{5} + \frac{7}{5} \\
 & = \frac{5}{5} \\
 & = 1
 \end{aligned}$$

$$\begin{aligned}
 58) \quad & \left(-3\frac{1}{2}\right) + 2\frac{2}{3} \\
 & = -\frac{7}{2} + \frac{8}{3} \rightarrow \text{need common denominator of 6!} \\
 & = -\frac{7}{2} \cdot \frac{3}{3} + \frac{8}{3} \cdot \frac{2}{2} \\
 & = -\frac{21}{6} + \frac{16}{6} \\
 & = -\frac{5}{6}
 \end{aligned}$$

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

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

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

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

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

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

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

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

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

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

### #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.

$$\begin{aligned}
 &81) \quad 4 - (-2) - 4 \\
 &= \quad \textcircled{4 + 2} - 4 \\
 &= \quad \textcircled{6} - 4 \\
 &= 2
 \end{aligned}$$

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

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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:  $\_\_\_ \cdot \_\_\_ = \_\_\_ \text{ AND } \_\_\_ \cdot \_\_\_ = \_\_\_$

Multiplying numbers with the same sign...

...will always give you a \_\_\_\_\_ answer.

Multiplication property of zero

Ex:  $\_\_\_ \cdot \_\_\_ = \_\_\_ \text{ AND } \_\_\_ \cdot \_\_\_ = \_\_\_$

Multiplying numbers with different signs...

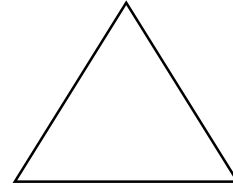
...will always give you a \_\_\_\_\_ answer.

Multiplication property of -1

Ex:  $\_\_\_ \cdot \_\_\_ = \_\_\_ \text{ AND } \_\_\_ \cdot \_\_\_ = \_\_\_$

Inverse property of multiplication

Ex:  $\_\_\_ \cdot \_\_\_ = \_\_\_ \text{ AND } \_\_\_ \cdot \_\_\_ = \_\_\_$



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

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

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

$= (-21)(5)$

$= -105$

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!*

$125) -1\frac{5}{8} \cdot -\frac{3}{5}$ $= -\frac{13}{8} \cdot -\frac{3}{5}$ $= +\frac{39}{40}$	$126) 2\frac{5}{9} \cdot -\frac{1}{6}$ $= \frac{23}{9} \cdot -\frac{1}{6}$ $= -\frac{23}{54}$
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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...

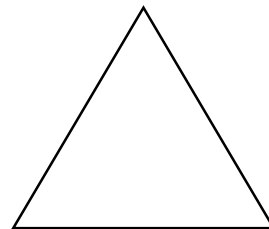
...will always give you a \_\_\_\_\_ answer.

Ex:  $\_\_\_ \div \_\_\_ = \_\_\_ \text{ AND } \_\_\_ \div \_\_\_ = \_\_\_$

Dividing numbers with different signs...

...will always give you a \_\_\_\_\_ answer.

Ex:  $\_\_\_ \div \_\_\_ = \_\_\_ \text{ AND } \_\_\_ \div \_\_\_ = \_\_\_$



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)  $\frac{9}{-1}$

**Convert all to improper fractions first**

**Then, take the \_\_\_\_\_ of the second fraction (F \_\_\_\_ I \_\_\_\_).**

**Lastly, \_\_\_\_\_ straight \_\_\_\_\_!**

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

154)  $\frac{-\frac{2}{5}}{-1\frac{4}{5}}$   
 $= -\frac{2}{5} \div -\frac{9}{5}$   
 $= -\frac{2}{5} \cdot -\frac{5}{9}$   
 $= +\frac{10}{45} \text{ (reduce)} \div \frac{5}{5}$   
 $= +\frac{2}{9}$

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)  $\frac{-1\frac{3}{4}}{1\frac{1}{6}}$