

OAK HALL SCHOOL

2024-2025

Suggested Review Exercises
for students entering

Math 7



*A message from the
Math Department*

Mathematics is a subject that is cumulative in nature as it constructs new knowledge from foundational prior knowledge. Therefore, as it is imperative to our students' success, we require them to have mastered certain skills and concepts before entering a new math course.

Each course in the math department has provided suggested exercises for incoming students as a resource for them to review the required prerequisites that are critical to their success in the course. While we will not be requiring students to complete these exercises as a formal assignment to be turned in, we have the highest expectations of our students as self-aware, proactive learners. Each student is responsible for gauging which prerequisites they need to reinforce and how much studying they need to do for them to start the new school year feeling confident, prepared, and accomplished.

We recommend that our students begin this process mid to late summer in order for everything to be fresh in their minds but also to give them time to recover from the school year they just completed. Rest is not an indulgence; it is a human necessity. We hope everyone has a safe, fun, and restful summer and we look forward to having another great school year when we come back in August!

Adding and Subtracting Fractions:

1. Write the fractions using the least common denominator (LCD)
2. Write the sum or difference of numerators over the denominator
3. Solve
4. If you are adding or subtracting mixed fractions, first turn your mixed fractions into improper fractions.

Example 1: $\frac{4}{5} + \frac{1}{3}$

Rewrite $\frac{4}{5}$ and $\frac{1}{3}$ using the LCD

$$\frac{4}{5} + \frac{1}{3} = \frac{12}{15} + \frac{5}{15}$$

Write sum of numerators over denominator

$$\frac{12 + 5}{15}$$

Add

$$\frac{17}{15}$$

Example 2: $3\frac{1}{6} - 1\frac{2}{3}$

Rewrite $3\frac{1}{6}$ and $1\frac{2}{3}$ as improper fractions

$$3\frac{1}{6} - 1\frac{2}{3} = \frac{19}{6} - \frac{5}{3}$$

Rewrite with LCD

$$\frac{19}{6} - \frac{10}{6}$$

Write as difference of numerators over denominator

$$\frac{19-10}{6}$$

Subtract

$$\frac{9}{6}$$

Simplify when needed

$$\frac{9}{6}$$

Evaluate each expression.

1) $\frac{1}{4} + \frac{1}{3}$

2) $7\frac{1}{7} + \frac{13}{7}$

3) $\frac{3}{2} + \frac{2}{3}$

4) $2 - \frac{1}{3}$

5) $3\frac{5}{6} + \frac{3}{4}$

6) $4\frac{1}{7} + \frac{5}{6}$

7) $3\frac{3}{7} + 3\frac{1}{2}$

8) $1\frac{3}{7} + \frac{3}{2}$

9) $\frac{7}{5} + 1\frac{1}{4}$

10) $4\frac{1}{2} - 3\frac{3}{5}$

Multiplying Fractions:

1. Multiply the numerators
2. Multiply the denominators
3. Simplify the fraction if needed

If you are multiplying mixed fractions, first turn your mixed fractions into improper fractions.

When multiplying fraction and whole numbers, make the whole number a fraction by putting it over 1.

Example 1: $\frac{2}{5} \times \frac{1}{8}$

Multiply the numerators & denominators:

$$\frac{2}{5} \times \frac{1}{8} = \frac{2 \times 1}{5 \times 8}$$

Simplify

$$\frac{2 \times 1}{5 \times 8} = \frac{2}{40} = \frac{1}{20}$$

Example 2: $3\frac{1}{7} \times 5$

Write mixed numbers as improper fractions:

$$3\frac{1}{7} \times 4 = \frac{25}{8} \times \frac{4}{1}$$

Multiply the numerators & denominators:

$$\frac{25 \times 4}{8 \times 1} = \frac{100}{8}$$

Simplify

$$\frac{100}{8} = \frac{25}{2}$$

Find each product.

11) $4\frac{1}{4} \times \frac{9}{10}$

12) $3\frac{6}{7} \times \frac{2}{3}$

13) $4\frac{1}{2} \times \frac{7}{5}$

14) $2 \times \frac{4}{3}$

15) $\frac{8}{5} \times \frac{1}{6}$

16) $2 \times \frac{7}{5}$

17) $\frac{1}{6} \times \frac{9}{5}$

18) $\frac{7}{4} \times \frac{9}{5}$

19) $1\frac{1}{10} \times \frac{3}{2}$

20) $\frac{3}{5} \times \frac{8}{5}$

Dividing Fractions:

Multiply the first fraction by the reciprocal of the second fraction, just remember:
Copy Dot Flop (or Keep Change Flip)

1. Keep the first fraction
2. Change the division symbol into multiplication
3. Flip the second fraction

If you are multiplying mixed fractions or whole numbers, first turn your mixed fractions or whole numbers into improper fractions.

Example:

$$\frac{5}{6} \div \frac{5}{12}$$

Keep, change, flip

$$\frac{5}{6} \div \frac{5}{12} = \frac{5}{6} \times \frac{12}{5}$$

Multiply

$$\frac{5}{6} \times \frac{12}{5} = \frac{60}{30}$$

Simplify

$$\frac{60}{30} = \frac{2}{1} = 2$$

Find each quotient.

$$21) \frac{5}{7} \div \frac{5}{7}$$

$$22) \frac{1}{2} \div \frac{5}{4}$$

$$23) \frac{7}{5} \div \frac{2}{3}$$

$$24) \frac{5}{3} \div \frac{3}{2}$$

$$25) 3\frac{3}{5} \div \frac{1}{6}$$

$$26) 1\frac{4}{5} \div \frac{2}{7}$$

$$27) 2 \div 3\frac{1}{6}$$

$$28) 4\frac{3}{4} \div \frac{1}{3}$$

$$29) 1\frac{1}{5} \div 5\frac{3}{10}$$

$$30) 5\frac{1}{2} \div 1\frac{4}{9}$$

Adding and subtracting decimals:

1. Line up the decimal points
2. Put in zeros so the numbers are the same length
3. Then add or subtract, remembering to put the decimal in the answer.

Example 1:

$$2.56 + 1.7$$

$$\begin{array}{r} 2.56 \\ +1.70 \\ \hline 4.26 \end{array}$$

Example 2:

$$13.8 - 1.27$$

$$\begin{array}{r} 13.80 \\ - 1.27 \\ \hline 12.53 \end{array}$$

Evaluate each expression.

31) $7.2 - 0.869$

32) $3.5 + 6.3$

33) $8 - 6.72$

34) $4.7 - 2.2$

35) $4 - 2.1$

36) $7.92 + 4.7$

37) $18.6 + 4.8$

38) $24.46 + 9.7$

39) $17.4 + 20.1$

40) $10.75 + 23.461$

Multiplying decimals:

1. Multiply normally, ignoring the decimals
2. Then put the decimal point in the answer. It will have as many decimal places as the two original numbers combined.

Example:

$$3.77 \times 2.8$$

Multiply normally

$$\begin{array}{r} 3.77 \text{ (2 decimal places)} \\ \times 2.8 \text{ (1 decimal place)} \\ \hline 3016 \\ + 7540 \\ \hline \end{array}$$

Move the decimal 3 times

$$10.556 \text{ (3 decimal places)}$$

Find each product.

41) 1.9×5.2

42) 2.4×0.2

43) 2.4×5.75

44) 2.9×2.9

45) 5×1.9

46) 5.2×2.8

47) 6.9×0.8

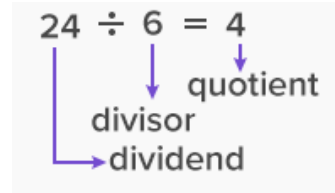
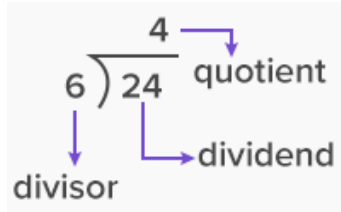
48) 11.1×11.1

49) 5.9×0.8

50) 3.68×4.5

Dividing Decimals:

There are three parts when dividing: the dividend, the divisor, and the quotient.



In order to divide, we must make the divisor a whole number. To do this, we multiply the divisor and the dividend by a power of 10 to make the divisor a whole number.

Then place the decimal point in the quotient above the decimal point in the dividend and divide.

$$3.25 \div 2.5$$

1.5 has one number behind the decimal place, so we need to multiply 1.5×10
 $2.5 \times 10 = 25$

Since we multiplied 2.5×10 , we must ALSO multiply 3.25×10
 $3.25 \times 10 = 32.5$

Now we can divide $32.5 \div 25$

Place your decimal point in the quotient above your decimal in the dividend.

$$25 \overline{)32.5}$$

Divide:

$$\begin{array}{r} 1.3 \\ 25 \overline{)32.5} \\ \underline{-25} \\ 75 \\ \underline{-75} \\ 0 \end{array}$$

Find each quotient.

51) $0.9 \div 3.6$

52) $5.98 \div 2.99$

53) $6.3 \div 7.5$

54) $1.8 \div 3$

55) $1.3 \div 2$

56) $7.92 \div 0.8$

57) $3.12 \div 2$

58) $2.5 \div 12.5$

59) $7.8 \div 3.12$

60) $5.7 \div 11.4$

Statistics: finding mean, median, and mode

Mean:

1. Add up all the numbers
2. Divide by how many numbers there are.

Median:

1. Put the numbers in order from least to greatest
2. Find the middle number in the sorted list
3. If there are an even number of numbers, you must find the middle pair of numbers and find the number halfway between them
 - a. Do this by adding them together and dividing by two.

Mode:

The number or numbers that occur the most often.

Example:

Find the mean, median, and mode of the following numbers:

3, 7, 12, 4, 3, 4, 9, 6

Mean: add up all the numbers and divide by how many numbers there are:

$$\frac{3 + 7 + 12 + 4 + 3 + 4 + 9 + 6}{8} = \frac{48}{8} = 6$$

Median:

Put all the numbers in order

3, 3, 4, 4, 6, 7, 9, 12

Find the middle

3, 3, 4, 4, 6, 7, 9, 12

There are an even number of numbers,

so we average our two middle numbers

$$\frac{4+6}{2} = 5$$

Mode: the number or numbers that occur the most: 3 and 4

Find the mode, median, mean, range, lower quartile, upper quartile, and interquartile range for each data set.

61) Games per World Series
7 4 7 6 7 5 4 4
7 4

62) Games per World Series
4 7 7 4 7 7 5 6
7 7

63) # Words in Book Titles
1 4 3 2 2 6 2 3
2 2 6

64) Mens Heights (Inches)
71 69 73 74 76 73 78
67 67

65) Age at First Job
18 15 13 16 20 11 13
18 17 14

66) Hits in a Round of Hacky Sack
6 7 2 5 5 6 13 5
18 3

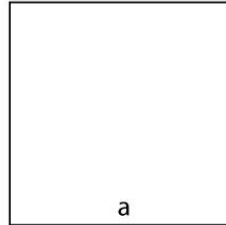
Finding area of rectangles, squares, and triangles:

Formulas for Area:



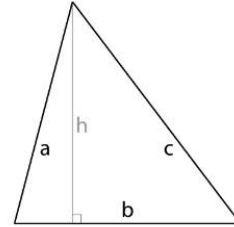
Rectangle

$$A = l \times w$$



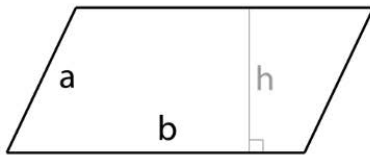
Square

$$A = a^2$$



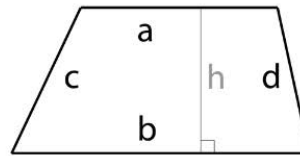
Triangle

$$A = \frac{b \times h}{2}$$



Parallelogram

$$A = b \times h$$

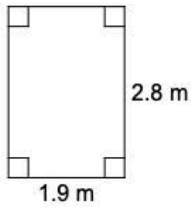


Trapezoid

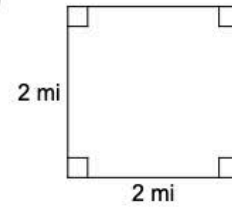
$$A = \frac{(a + b) \times h}{2}$$

Find the area of each.

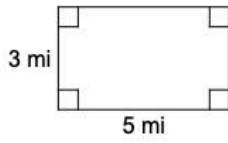
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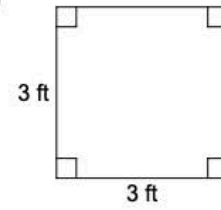
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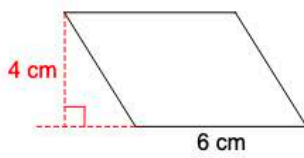
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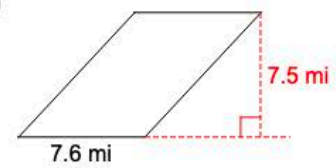
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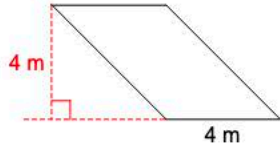
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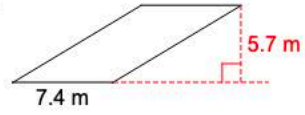
72)



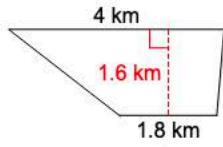
73)



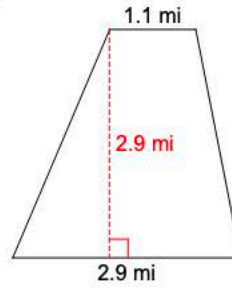
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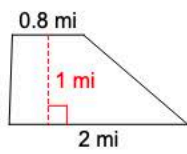
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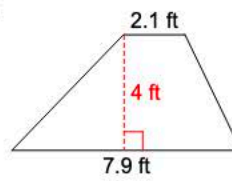
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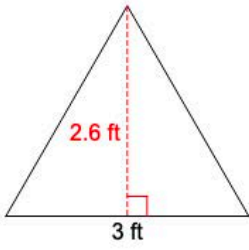
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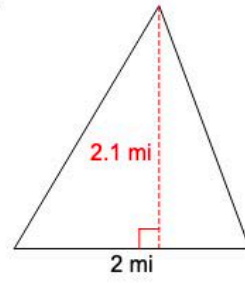
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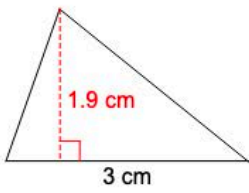
79)



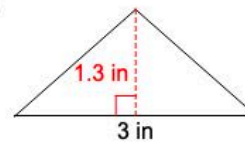
80)



81)



82)



Solving Equations:

We use the *inverse operation* to solve equations. Inverse operations “undo” each other.

Addition and subtraction are inverse operations

Example 1:	$x + 4 = 6$
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Undo addition with subtraction	$x + 4 = 6$
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Solve	$\begin{array}{r} -4 \quad -4 \\ x \quad = 2 \end{array}$
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Example 2:	$y - 3 = 9$
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Undo subtraction with addition	$y - 3 = 9$
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Solve	$\begin{array}{r} +3 \quad +3 \\ y \quad = 12 \end{array}$
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Multiplication and division are also inverse operations

Example 3:	$z \times 4 = 12$
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Undo multiplication with division	$z \times 4 = 12$
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Solve	$\begin{array}{r} \div 3 \quad \div 3 \\ z \quad = 4 \end{array}$
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Example 4:	$\frac{a}{5} = 4$
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Undo division with multiplication	$\frac{a}{5} \times 5 = 4 \times 5$
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Solve	$a = 20$
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Solve each equation.

83) $x - 4 = 4$

84) $x + 5 = 8$

85) $10 = k + 8$

86) $5 = k + 3$

87) $x + 8 = 9$

88) $p - 3 = 6$

89) $x + 7 = 14$

90) $15 = k + 10$

91) $2 = n - 5$

92) $k + 9 = 9$

$$93) 54 = 6b$$

$$94) \frac{x}{2} = 5$$

$$95) 6p = 48$$

$$96) 24 = 4m$$

$$97) \frac{n}{8} = 7$$

$$98) \frac{k}{3} = 9$$

$$99) 5 = \frac{x}{4}$$

$$100) 10 = \frac{r}{7}$$

$$101) 8x = 80$$

$$102) 4 = \frac{r}{6}$$

Converting Rational Numbers

To convert fractions to decimals:

1. Divide the numerator by the denominator

$$\frac{3}{5} = 3 \div 5 = 0.6$$

To convert percents to fractions:

1. Put the percent over 100
2. Simplify the fraction

$$32\% = \frac{32}{100} = \frac{8}{25}$$

To convert decimals to percents:

1. Move the decimal two times to the right

$$0.45 = 45\%$$

To convert percents to decimals:

1. Move the decimal two times to the left. If there is only one digit, add a zero.

$$05\% = 0.05$$

Write each as a percent and a decimal.

103) $\frac{1}{4}$

104) $\frac{2}{5}$

105) $\frac{1}{10}$

106) $\frac{1}{2}$

107) $\frac{4}{5}$

108) $\frac{19}{25}$

Write each as a simplified fraction and as a percent.

109) 0.86

110) 0.15

111) 0.4

112) 0.7

Answers to odd problems:

1) $\frac{7}{12}$

3) $2\frac{1}{6}$

5) $4\frac{7}{12}$

7) $6\frac{13}{14}$

9) $2\frac{13}{20}$

11) $3\frac{33}{40}$

13) $6\frac{3}{10}$

15) $\frac{4}{15}$

17) $\frac{3}{10}$

19) $1\frac{13}{20}$

21) 1

23) $2\frac{1}{10}$

25) $21\frac{3}{5}$

27) $\frac{12}{19}$

29) $\frac{12}{53}$

31) 6.331

33) 1.28

35) 1.9

37) 23.4

39) 37.5

41) 9.88

43) 13.8

45) 9.5

47) 5.52

49) 4.72

51) 0.25

53) 0.84

55) 0.65

57) 1.56

59) 2.5

61) Mode = 4 and 7; Median = 5.5; Mean = 5.5; Range = 3; $Q_1 = 4$; $Q_3 = 7$; IQR = 3

63) Mode = 2; Median = 2; Mean = 3; Range = 5; $Q_1 = 2$; $Q_3 = 4$; IQR = 2

65) Mode = 13 and 18; Median = 15.5; Mean = 15.5; Range = 9; $Q_1 = 13$; $Q_3 = 18$; IQR = 5

67) 5.32 m^2

69) 15 mi^2

71) 24 cm^2

73) 16 m^2

75) 4.64 km^2

77) 1.4 mi^2

79) 3.9 ft^2

81) 2.85 cm^2

83) 8

85) 2

87) 1

89) 7

91) 7

93) 9

95) 8

97) 56

99) 20

101) 10

103) 25%; 0.25

105) 10%; 0.1

107) 80%; 0.8

109) $\frac{43}{50}$; 86%

111) $\frac{2}{5}$; 40%