



2023

**Summer Learning Packet**

7th Grade



### Summer Reading Program 2023

The teachers at Our Lady of Lourdes Catholic School would like to bring some summer reading your way! We want to make sure kids are continuing to read and appreciate literature, even through the summer. **We have compiled a list of required books for incoming Kindergarten through 8<sup>th</sup> grade students.** Teachers have also added reading activities to do throughout the summer. As an incentive for reading throughout the summer, your child can earn a free dress pass. See the attached forms for details. The books are available through the OLL Library, Fort Vancouver Library, Amazon, Goodwill, OLL alumni...Please let us know if you need a copy.

We look forward to the sense of community that a universal Summer Reading Program will bring to the Lourdes family. Please feel free to make this a family activity and enjoy the books together. Involve yourself in the reading process as you feel is appropriate for your child's reading level. You can combine this with other summer reading programs such as Barnes & Noble or your local public library.

Incoming Grade	Title/Author
Kindergarten	Any Pete the Cat book / James Dean
1st	Any Elephant and Piggie book / Mo Willems
2nd	Any Henry and Mudge book / Cynthia Rylant
3rd	Freckle Juice / Judy Blume
4th	Tales of a Fourth Grade Nothing / Judy Blume
5th	The Report Card / Andrew Clements
6th	Wonder / R.J. Palacio
7th	The Boys in the Boat *Young Readers Edition*/ Daniel James Brown
8th	Chasing Lincoln's Killer / James L. Swanson

## Earn a Free Dress Pass!!

Keep track of the books you read this summer  
by writing down the titles.

K-3 Read 6 books (age/reading level appropriate)

4-8 Read 3 books (age/reading level appropriate)

Turn this form into the Library the first week of school to get your free dress pass.

Name:	Grade:

**LOURDES LANCERS**



Directions: Creative Notes are designed to bring awareness to the key events of the chapter. While reading the young adult version of The Boys in the Boat, by Daniel James Brown, jot down the information related to the chapter.

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

Date: \_\_\_\_\_

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

# Prologue

The WHY behind the book:

The Boys in the Boat  
by Daniel James Brown,  
Young Adult Version

What  
Genre is this book?

Why is it that genre?

What is it?

Imagery

Examples:

Mood

Feelings you feel/notice

Author's Attitude

Tone

Ch. 1

VOCAB: Define these  
2 words.

-Demoralize:

-Emblazoned:

Ch. 3

Coach Ulbrickson's thinking beyond the upcoming season: What does he see for the future of the team?

Joe

List physical traits:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

The boys would need 3-4 traits  
to succeed next season.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

"So began Joe's life in exile." What is the meaning of this quote?

Ch. 4

How might this negative experience benefit Joe in the future?

Roger

List physical traits:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Old Nero

Using physical traits,  
Describe this boat.

Ch. 5

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

...this dream life shattered His memories of what happened next were a *kaleidoscope of broken images*.

Explain the italicized metaphor

Ch. 2

Main Characters

Metaphor Meaning

End of Chapter 6

Tone What feeling is the author trying to portray?

How do you feel now after reading chp. 6?

MOOD

Roger's Life What is it like? Daily & in his past?

Why is Joyce's Job Ironical?

Ch. 9

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Ch. 6

Ch. 7

<u>Ch. 10</u> <u>The Prob:</u>	<u>Coach Bolles</u> <u>Solution:</u>	<u>What is Joe's</u> <u>Realization</u>

Ch. 8

Joe's Turning Point:

What does her return mean to Joe?

Joyce  
Returns:

Ch. 11

The Making of Something Exceptional – Why?  
What is the exceptional thing? Why is it important?

Ch. 12

The Race in New York  
Explain what happened at the race.

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Irony  
means:

How America Changed During the

Dust Bowl: Provide  
3-4 facts  
on how America  
changed.

Ch. 13

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Ch. 14

Their "Swing":

Describe this and how it  
refers to the crew.

Ch. 15

Joe's Visit With His Dad  
How did it go?

How Joe Felt About the Visit:

Why He Felt That Way:

Tone with Evidence:

~~Recall~~ what tone is.  
Provide the tone after  
Ch. 16 i evidence from  
the text to prove why.

Ch. 16

Joe's Thoughts About Olympic Gold

What does the possibility of winning gold  
mean to Joe?

Ch. 17

New Beginnings

What kind of New Beginnings  
happen in this chapter?

Ch. 18

Ch. 19

Joe's Slump:

What causes Joe to be  
in a slump? List 3  
life struggles for Joe.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Joe's Transformation:

How does Joe change in this chapter?

Ch. 20

What is Hitler's Plan?

Ch. 23

What does Goebbels do?

Coach Ulbrickson's Plan for the race. Explain his Plan.

Ch. 21

Bobby Moch's Plan

How did they transform the city?

Transforming Berlin

Ch. 24

What is 1. \_\_\_\_\_ 2. \_\_\_\_\_

The

Final

Line

Up:

3. \_\_\_\_\_ 4. \_\_\_\_\_

5. \_\_\_\_\_ 6. \_\_\_\_\_

Who is in which spot?

Why is the U.S.'s spot significant?

Ch. 25

Community Efforts:

Explain how the community is involved in the boys getting to the race.

Ch. 22

The Results: What did their win mean for the team? What did the win mean for America?

Ch. 26

**6th Grade Math Review**  
**REQUIRED**  
**(for incoming 7th Graders)**

# Addition & Subtraction of Fractions & Mixed Numbers

## Adding & Subtracting Fractions

1. Find a common denominator.
2. Add or subtract the two numerators and keep the denominator the same.
3. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $\frac{1}{3} + \frac{1}{6}$

$$\begin{array}{r} \frac{1}{3} \times \frac{2}{2} = \frac{2}{6} \\ + \frac{1}{6} \times \frac{1}{1} = \frac{1}{6} \\ \hline \frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \boxed{1\frac{1}{3}} \end{array}$$

## Adding Mixed Numbers

1. Find a common denominator.
2. Add the two numerators and keep the denominator the same.
3. Add the whole numbers.
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $2\frac{3}{4} + 1\frac{2}{3}$

$$\begin{array}{r} 2\frac{3}{4} = 2\frac{9}{12} \\ + 1\frac{2}{3} = 1\frac{8}{12} \\ \hline 3\frac{17}{12} = \boxed{4\frac{5}{12}} \end{array}$$

## Subtracting Mixed Numbers

1. Find a common denominator.
2. Subtract the two numerators and keep the denominators the same. If the top numerator is smaller than the bottom numerator, borrow from the whole number and rename the top fraction.
3. Subtract the whole numbers.
4. Simplify the answer.

ex:  $3\frac{1}{4} - 1\frac{1}{3}$

$$\begin{array}{r} 3\frac{1}{4} = 2\frac{3}{4} + \frac{1}{4} = 2\frac{9}{12} \\ - 1\frac{1}{3} = 1\frac{4}{12} \\ \hline 1\frac{5}{12} = \boxed{1\frac{5}{12}} \end{array}$$

Find the sum. Write your answer in simplest form.

1. $\frac{1}{4} + \frac{1}{2}$	2. $\frac{2}{5} + \frac{1}{3}$	3. $\frac{7}{15} + \frac{3}{10}$	4. $\frac{11}{28} + \frac{4}{7}$
5. $\frac{3}{4} + \frac{1}{12}$	6. $\frac{9}{10} + \frac{13}{20}$	7. $4\frac{15}{16} + 7\frac{3}{4}$	8. $2\frac{16}{25} + 3\frac{18}{20}$
9. $3\frac{2}{5} + 9\frac{1}{10}$	10. $6\frac{1}{42} + 4\frac{5}{6}$	11. $18\frac{7}{9} + 16$	12. $4\frac{7}{8} + \frac{1}{3}$

Find the difference. Write your answer in simplest form.

13. $\frac{7}{8} - \frac{1}{4}$	14. $\frac{13}{15} - \frac{1}{3}$	15. $\frac{7}{9} - \frac{2}{6}$	16. $\frac{21}{24} - \frac{3}{8}$
17. $\frac{3}{14} - \frac{1}{7}$	18. $\frac{9}{10} - \frac{1}{2}$	19. $9 - 4\frac{1}{12}$	20. $12\frac{18}{25} - 8\frac{4}{5}$
21. $5\frac{8}{9} - 3\frac{2}{3}$	22. $8\frac{12}{16} - 7\frac{31}{32}$	23. $10\frac{3}{4} - 6\frac{4}{5}$	24. $13\frac{7}{8} - \frac{10}{12}$

# Multiplication & Division of Fractions & Mixed Numbers

## Multiplying Fractions & Mixed Numbers

1. Turn any mixed numbers and whole numbers into improper fractions.
2. Cross-simplify if possible.
3. Multiply the numerators and then multiply the denominators
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $2\frac{1}{4} \cdot \frac{1}{3}$

$$\begin{array}{c} 3 \\ \cancel{4} \end{array} \cdot \frac{1}{\cancel{3}_1} = \boxed{\frac{3}{4}}$$

## Dividing Fractions & Mixed Numbers

1. Turn any mixed numbers and whole numbers into improper fractions.
2. Keep the first fraction the same, change the division to multiplication, and flip the second fraction to its reciprocal.
3. Multiply the fractions.
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $7 \div 1\frac{3}{4}$

$$\begin{array}{c} \frac{7}{1} \div \frac{7}{4} \\ \downarrow \\ \frac{7}{1} \cdot \frac{4}{\cancel{7}_1} = \frac{4}{1} = \boxed{4} \end{array}$$

Find the product. Write your answer in simplest form.

25. $\frac{1}{8} \cdot \frac{1}{7}$	26. $\frac{2}{9} \cdot \frac{12}{14}$	27. $\frac{7}{12} \cdot \frac{8}{14}$	28. $\frac{9}{24} \cdot \frac{16}{81}$
29. $\frac{3}{14} \cdot \frac{21}{33}$	30. $\frac{1}{2} \cdot \frac{9}{13}$	31. $2\frac{1}{6} \cdot \frac{3}{5}$	32. $8\frac{4}{5} \cdot 1\frac{5}{11}$
33. $2\frac{1}{2} \cdot \frac{2}{5}$	34. $9\frac{2}{3} \cdot 6$	35. $13\frac{1}{3} \cdot 2\frac{1}{10}$	36. $7 \cdot \frac{1}{3}$

Find the quotient. Write your answer in simplest form.

37. $\frac{5}{6} \div \frac{1}{4}$	38. $\frac{1}{2} \div \frac{1}{4}$	39. $\frac{3}{4} \div \frac{9}{12}$	40. $\frac{21}{35} \div \frac{7}{25}$
41. $\frac{6}{7} \div 3$	42. $\frac{2}{11} \div \frac{1}{33}$	43. $1\frac{1}{4} \div 2\frac{1}{3}$	44. $5\frac{3}{6} \div 3$
45. $10\frac{1}{4} \div \frac{2}{5}$	46. $3\frac{2}{3} \div 1\frac{1}{7}$	47. $4\frac{3}{8} \div \frac{9}{10}$	48. $8 \div \frac{3}{4}$

# Operations with Decimals

## Adding & Subtracting Decimals

1. Write the problem vertically, lining up the decimal points.
2. Add additional zeroes at the end, if necessary, to make the numbers have the same number of decimal places.
3. Add/subtract as if the numbers are whole numbers
4. Bring the decimal point straight down

ex:  $10.03 + 5.2$

$$\begin{array}{r} 10.03 \\ + 5.20 \\ \hline 15.23 \end{array}$$

## Multiplying Decimals

1. Write the problem vertically with the numbers lined up to the right. The decimal points do NOT need to be lined up.
2. Ignore the decimals and multiply as if the numbers are whole numbers.
3. Count the total number of decimal places in the factors and put a decimal point in the product so that it has that same number of decimal places.

ex:  $1.03 \times 2.8$

$$\begin{array}{r} 1.03 \rightarrow 2 \text{ decimal places} \\ \times 2.8 \rightarrow 1 \text{ decimal place} \\ \hline 824 \\ + 2060 \\ \hline 2884 \end{array} \rightarrow \begin{array}{r} 2.884 \\ \hline \end{array}$$

3 decimal places

## Dividing Decimals

1. Write the dividend under the long division symbol and the divisor to the left of it.
2. Move the decimal point in the divisor after the number to turn it into a whole number and then move the decimal in the dividend the same number of places. Then bring it up.
3. Divide as if the numbers are both whole numbers.
4. Annex zeros in the dividend as needed until there is no remainder. If your answer is a repeating decimal, write the answer using bar notation.

ex:  $25.3 \div 0.3$

$$\begin{array}{r} 84.\overline{3} \\ 0.3 \overline{) 25.30} \\ \underline{-24} \phantom{0} \\ 13 \phantom{0} \\ \underline{-12} \phantom{0} \\ 10 \\ \underline{-9} \\ 1 \end{array}$$

Find the sum or difference.

49. $6.2 + 3.4$	50. $8.04 - 6.8$	51. $12.4 + 0.899$	52. $12.9 - 2.043$
53. $163.29 + 13.987$	54. $13 - 6.7$	55. $3.91 + 1.93$	56. $34.2 - 29.027$

Find the product.

57. $9.2 \cdot 3.1$	58. $(14.1)(2.7)$	59. $91 \times 4.5$	60. $82.04 \times 1.2$
61. $(1.1)(6.78)$	62. $45 \cdot 0.1$	63. $0.010 \times 13.9$	64. $(2.34)(5.6)$

Find the quotient.

65. $8.4 \div 2$	66. $1.56 \div 1.3$	67. $7.45 \div 2$	68. $9 \div 0.8$
69. $68 \div 3.4$	70. $9.4 \div 0.2$	71. $0.045 \div 0.15$	72. $4 \div 0.3$

# Geometry

## Area Formulas

\*\*\* Remember that area is the space *inside* a figure! \*\*\*

- Area of a Rectangle = length x width
- Area of a Parallelogram = base x height
- Area of a Triangle =  $\frac{1}{2}$  base x height
- Area of a Circle =  $\pi \times \text{radius}^2$

## Perimeter Formulas

\*\*\* Remember that perimeter is the distance *around* a figure! \*\*\*

- Perimeter of Any Polygon: add up all of the side lengths
- Circumference of a Circle =  $2 \times \pi \times \text{radius}$

## Volume Formula

\*\*\* Remember that volume is the capacity of a 3D figure! \*\*\*

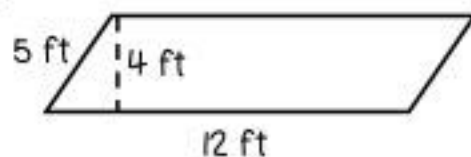
- Volume of a Rectangular Prism: length x width x height

Find the area and perimeter (or circumference) of each figure. Use 3.14 for  $\pi$ .

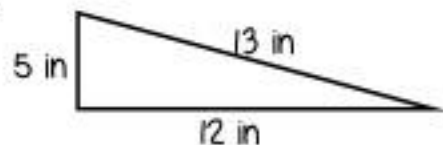
73.



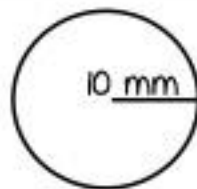
74.



75.

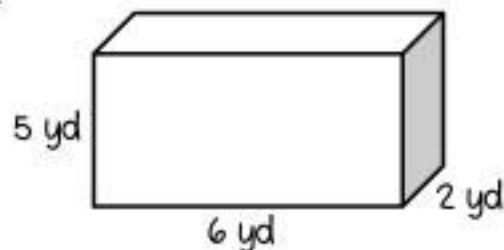


76.



Find the volume.

77.



Solve each word problem.

78. Danny is installing a fence around his rectangular yard. His yard is 20 feet long by 45 feet wide. If the fencing he picked out costs \$25 per foot, how much money will Danny spend on the fence?

79. Tameka wants to put a carpet in her rectangular bedroom. Her room is 22 feet long by 18 feet wide. How much carpeting will Tameka need?

80. Don wants to bring some sand home from his vacation at the beach. He has a box that is 3 inches wide, 4 inches long, and 2 inches tall. How much sand can he fit in the box?

# One-Step Equations

## Addition Equations

Subtract the number being added to the variable from both sides of the equation

$$\begin{array}{l} \text{ex: } 4 + x = 18 \\ \quad \quad \quad \underline{-4} \quad \quad \quad \underline{-4} \\ \quad \quad \quad \boxed{x = 14} \end{array}$$

## Subtraction Equations

Add the number being subtracted from the variable to both sides of the equation

$$\begin{array}{l} \text{ex: } 20 = a - 5 \\ \quad \quad \quad \underline{+5} \quad \quad \quad \underline{+5} \\ \quad \quad \quad 25 = a \rightarrow \boxed{a = 25} \end{array}$$

## Multiplication Equations

Divide both sides of the equation by the number next to the variable

$$\begin{array}{l} \text{ex: } 7b = 28 \\ \quad \quad \quad \underline{7} \quad \quad \quad \underline{7} \\ \quad \quad \quad \boxed{b = 4} \end{array}$$

## Division Equations

Multiply both sides of the equation by the number under the variable

$$\begin{array}{l} \text{ex: } 5 \cdot \frac{n}{5} = 10 \cdot 5 \\ \quad \quad \quad \underline{5} \quad \quad \quad \underline{5} \\ \quad \quad \quad \boxed{n = 50} \end{array}$$

Solve each one-step equation for the given variable.

81. $x + 18 = 32$	82. $18f = 720$	83. $h - 56 = 57$	84. $\frac{b}{6} = 12$
85. $12 = r - 76$	86. $33 + d = 65$	87. $14m = 42$	88. $10c = 5$
89. $38 = 19j$	90. $w + 65 = 100$	91. $r - 7 = 9$	92. $x \div 12 = 9$
93. $14 + x = 18$	94. $\frac{p}{22} = 7$	95. $47 = x - 5$	96. $k + 16 = 76$
97. $2 = 6m$	98. $t - 8 = 14$	99. $\frac{h}{19} = 11$	100. $47 = 18 + b$

**6th Grade Math Review**  
**\*OPTIONAL\***  
**(for incoming 7th Graders)**

## Adding & Subtracting Decimals

1. Write the problem vertically, lining up the decimal points.
2. Add additional zeroes at the end, if necessary, to make the numbers have the same number of decimal places.
3. Add/subtract as if the numbers are whole numbers
4. Bring the decimal point straight down

ex:  $14.2 - 7.934$

$$\begin{array}{r} 14.200 \\ - 7.934 \\ \hline 6.266 \end{array}$$

## Multiplying Decimals

1. Write the problem vertically with the numbers lined up to the right. The decimal points do NOT need to be lined up.
2. Ignore the decimals and multiply as if the numbers are whole numbers.
3. Count the total number of decimal places in the factors and put a decimal point in the product so that it has that same number of decimal places.

ex:  $6.94 \times 7.8$

$$\begin{array}{r} 6.94 \rightarrow 2 \text{ decimal places} \\ \times 7.8 \rightarrow 1 \text{ decimal place} \\ \hline 5552 \\ + 48580 \\ \hline 54132 \end{array}$$

3 decimal places

$$\boxed{54.132}$$

## Dividing Decimals

1. Write the dividend under the long division symbol and the divisor to the left of it.
2. Move the decimal point in the divisor after the number to turn it into a whole number and then move the decimal in the dividend the same number of places. Then bring it up.
3. Divide as if the numbers are both whole numbers.
4. Annex zeros in the dividend as needed until there is no remainder. If your answer is a repeating decimal, write the answer using bar notation.

ex:  $25.3 \div 0.3$

$$\begin{array}{r} 84.\bar{3} \\ 0.3 \overline{) 25.30} \\ \underline{-24} \phantom{0} \\ 13 \phantom{0} \\ \underline{-12} \phantom{0} \\ 10 \\ \underline{-9} \\ 1 \end{array}$$

## Order of Operations

1. Grouping Symbols (parentheses, brackets, etc.)
2. Exponents
3. Multiplication & Division (left to right)
4. Addition & Subtraction (left to right)

ex:  $5 + 4(3 - 1.2)$

$$5 + 4(1.8)$$

$$5 + 7.2$$

$$\boxed{12.2}$$

Evaluate each expression.

1. $5.983 + 2.99$	2. $224 - 56.73$	3. $6.12 - 4.923$
4. $24.5 \cdot 3.2$	5. $0.23 \cdot 7$	6. $3.86 \cdot 9.15$
7. $14.8 \div 5$	8. $46.3 \div 1.5$	9. $147 \div 2.25$
10. $24.33 - 2.5 \cdot 7$	11. $3.9 + 4.5^2$	12. $9.25(18.4 - 2 \cdot 1.2)$

Solve each word problem, showing all work.

13. Jeff had \$46.18 in his wallet Monday morning. He gave half of his money to his brother. He then bought two donuts for \$0.75 each and a cup of coffee for \$2.99. How much money did Jeff have left?	14. Five friends split a \$65.20 bill at a restaurant. They also each left \$2.75 for the tip. How much money did each person pay in all?
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## Adding Fractions & Mixed Numbers

1. Find a common denominator for the two fractions.
2. Add the two numerators and keep the denominator the same.
3. Add the whole numbers.
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $3\frac{3}{4} + 2\frac{1}{2}$

$$\begin{array}{r} 3\frac{3}{4} = 3\frac{3}{4} \\ + 2\frac{1}{2} = 2\frac{2}{4} \\ \hline 5\frac{5}{4} = 6\frac{1}{4} \end{array}$$

## Subtracting Fractions & Mixed Numbers

1. Find a common denominator for the two fractions.
2. Subtract the two numerators and keep the denominators the same.  
If the top numerator is smaller than the bottom numerator, borrow from the whole number and rename the top fraction.
3. Subtract the whole numbers.
4. Simplify the answer.

ex:  $5\frac{1}{4} - 1\frac{2}{3}$

$$\begin{array}{r} 5\frac{1}{4} = 5\frac{3}{12} = 4\frac{15}{12} \\ - 1\frac{2}{3} = 1\frac{8}{12} = 1\frac{8}{12} \\ \hline 3\frac{7}{12} \end{array}$$

## Multiplying Fractions & Mixed Numbers

1. Turn any mixed numbers and whole numbers into improper fractions.
2. Cross-simplify if possible.
3. Multiply the numerators and then multiply the denominators
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $2\frac{1}{6} \cdot \frac{4}{7}$

$$\frac{13}{\cancel{3}\cancel{6}} \cdot \frac{\cancel{4}^2}{7} = \frac{26}{21} = 1\frac{5}{21}$$

## Dividing Fractions & Mixed Numbers

1. Turn any mixed numbers and whole numbers into improper fractions.
2. Keep the first fraction the same, change the division to multiplication, and flip the second fraction to its reciprocal.
3. Multiply the fractions.
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex:  $7 \div 1\frac{3}{4}$

$$\begin{array}{r} \frac{7}{1} \div \frac{7}{4} \\ \downarrow \\ \frac{7}{1} \cdot \frac{4}{7} = \frac{4}{1} = 4 \end{array}$$

Evaluate each expression.

15.  $\frac{4}{5} + \frac{3}{4}$

16.  $4\frac{2}{7} + 2\frac{9}{14}$

17.  $8\frac{11}{12} + 9\frac{5}{18}$

18.  $6 - \frac{3}{8}$

19.  $8\frac{3}{5} - 2\frac{1}{3}$

20.  $4\frac{1}{6} - \frac{8}{9}$

21.  $\frac{4}{25} \cdot \frac{15}{16}$

22.  $2\frac{3}{4} \cdot 8$

23.  $6\frac{5}{8} \cdot 3\frac{1}{2}$

24.  $\frac{7}{9} \div \frac{2}{3}$

25.  $\frac{4}{5} \div 10$

26.  $5\frac{2}{3} \div 2\frac{5}{6}$

Solve each word problem, showing all work.

27. Jaimie ran  $3\frac{1}{2}$  miles on Monday. She ran half as far on Tuesday as she did on Monday. How far did Jaimie run in all on Monday and Tuesday?

28. A  $5\frac{1}{2}$  quart pot is filled  $\frac{2}{3}$  of the way with water. How many more quarts of water can the pot hold?

## Ratios

Ratios are comparisons of two quantities.  
There are 3 different ways to write ratios:

- Fraction ( $\frac{A}{B}$ )
- Colon (A:B)
- Word Form (A to B)

ex: write the ratio of triangles to circles  
in 3 ways:  $\triangle \triangle \triangle \triangle \bigcirc \bigcirc$

$$\frac{4}{2} = \frac{2}{1}, 2:1, 2 \text{ to } 1$$

Ratios can be simplified just like fractions.

## Rates & Unit Rates

Rates are ratios that compare quantities measured in different units.  
A unit rate is a rate with a denominator of 1.

ex: express as a unit rate:  
125 miles in 4 hours

To convert a rate to a unit rate:

1. Divide the numerator by the denominator
2. Either write your answer as a fraction with a label for the both the numerator and denominator OR as one number labeled with the first unit "per" the second unit

$$\frac{125 \text{ mi}}{4 \text{ hr}} \quad 125 \div 4 = 31.25$$

$$\frac{31.25 \text{ mi}}{1 \text{ hr}} \text{ or } 31.25 \text{ miles per hr}$$

## Fractions, Decimals, & Percent

To convert a:

- Decimal to Percent: move the decimal point 2 places to the right
- Percent to Decimal: move the decimal point 2 places to the left
- Decimal to Fraction: write the decimal over the place value of the last digit and then simplify
- Fraction to Decimal: divide the numerator by the denominator
- Percent to Fraction: write the percent over 100 and then simplify
- Fraction to Percent: convert the fraction to a decimal and then convert the decimal to a percent

$$\text{ex: } 0.345 = \boxed{34.5\%}$$

$$\text{ex: } 7\% = \boxed{0.07}$$

$$\text{ex: } 0.008 = \frac{8}{1000} = \frac{1}{125}$$

$$\text{ex: } \frac{1}{5} = 5 \overline{)0.2}$$

$$\text{ex: } 45\% = \frac{45}{100} = \frac{9}{20}$$

$$\text{ex: } \frac{3}{10} = 0.3 = \boxed{30\%}$$

## Percent of a Number

1. Turn the percent to a fraction or decimal.
2. Multiply the fraction/decimal by the number.

ex: Find 18% of 40

$$0.18 \cdot 40 = \boxed{7.2}$$

Write each ratio in 3 ways.

29. A bank contains 15 pennies and 12 nickels. Write the ratio of nickels to pennies.

30. A bowl contains 6 apples and some bananas. If there are a total of 10 pieces of fruit, find the ratio of apples to bananas.

Convert each rate to a unit rate.

31. \$4.25 for 64 fluid ounces

32. 297 miles on 11 gallons of gas

33. 124 feet in 10 seconds

Complete the chart by converting each number to a percent, fraction, and/or decimal.

Fraction	Decimal	Percent
34. $\frac{3}{8}$		
35.	0.45	
36.		72%
37.	0.1	
38. $\frac{3}{200}$		

Find each percent of a number.

39. 30% of 90

40. 15% of 38

41. 50% of 86

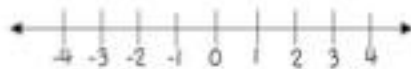
42. 75% of 160

43. 24% of 35

44. 2% of 74

# Comparing Integers

Integers are numbers without fractional parts. They can be positive, negative, or zero. The further right a number is on the number line, the greater it is.



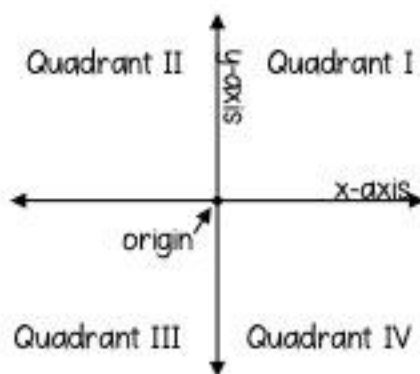
The absolute value of a number is the distance the number is from zero.

ex: compare with  $<$ ,  $>$ , or  $=$

$$-7 \bigcirc |-9| \leftarrow \text{The absolute value of } -9 = 9$$

$$-7 \boxed{<} 9$$

# The Coordinate Plane

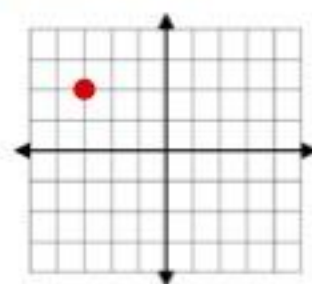


Ordered Pair:  $(x, y)$

To graph a point on the coordinate plane, start at the origin. The first number in the ordered pair (the x-coordinate) tells you how far left (if negative) or right (if positive) to move. The second number (the y-coordinate) tells you how far up (if positive) or down (if negative) to move.

ex: Graph the point  $(-3, 2)$  and state the quadrant in which it is located.

Start at the origin, and move LEFT 3 and UP 2



Quadrant II

# Perimeter, Area and Volume

- Perimeter of Any Polygon: add all side lengths

- Area of a Rectangle:  $A = lw$

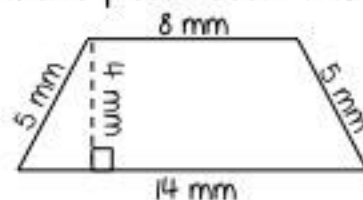
- Area of Parallelogram:  $A = bh$

- Area of Triangle:  $A = \frac{1}{2}bh$

- Area of Trapezoid:  $A = \frac{1}{2}h(b_1 + b_2)$

- Volume of Rectangular Prism:  $V = lwh$

ex: Find the perimeter & area:



Perimeter:  $P = 5 + 8 + 5 + 14 = \boxed{32 \text{ mm}}$

Area: This is a trapezoid, so use the area of a trapezoid formula:  $A = \frac{1}{2}h(b_1 + b_2)$

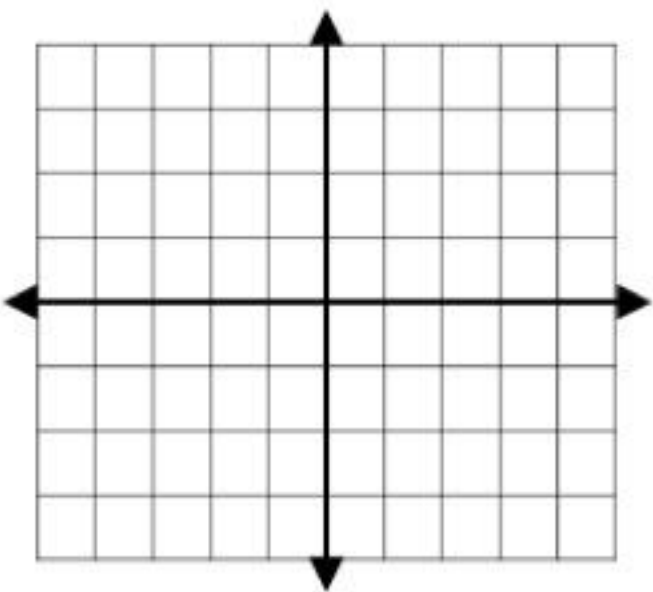
The bases are the sides that are parallel, and the height is perpendicular to the bases.

$$\rightarrow A = \frac{1}{2}(4)(8 + 14) = \boxed{44 \text{ mm}^2}$$

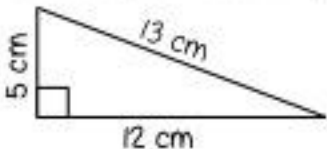
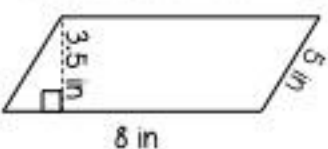
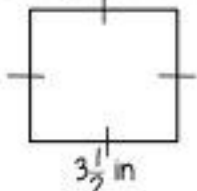
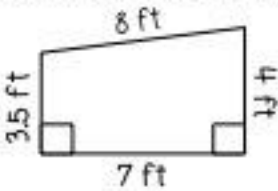
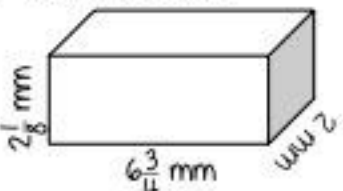
Compare the integers with  $<$ ,  $>$ , or  $=$ .

45. $-4 \bigcirc -5$	46. $2 \bigcirc -2$	47. $ -5  \bigcirc  5 $	48. $-7 \bigcirc 6$	49. $-13 \bigcirc -9$
50. $ -7  \bigcirc -6$	51. $-17 \bigcirc -14$	52. $ -3  \bigcirc  -2 $	53. $0 \bigcirc -6$	54. $ -4  \bigcirc  6 $

Graph and label each of the ordered pairs in the coordinate plane. Then state the quadrant or axis in/on which the point is located.

55. A(2, 4)	56. B(0, -3)	
57. C(1, -1)	58. D(3, 3)	
59. E(-4, 1)	60. F(2, 0)	
61. G(-3, -2)	62. H(-2, 3)	
63. I(0, 2)	64. J(-1, -4)	

Find the perimeter, area, and/or volume of the given figure.

<p>65. Find the perimeter &amp; area:</p> 	<p>66. Find the perimeter &amp; area:</p> 	<p>67. Find the perimeter &amp; area:</p> 
<p>68. Find the perimeter &amp; area:</p> 	<p>69. Find the area of a square with a perimeter of 45 cm</p>	<p>70. Find the volume:</p> 

## Evaluating Algebraic Expressions

1. Substitute the given numbers for the variables
2. Evaluate the expression using the order of operations

ex: evaluate  $x + 4y$  for  
 $x = 4$  &  $y = 6$

$$\begin{array}{l} 4 + 4(6) \\ 4 + 24 = \boxed{28} \end{array}$$

## One-Step Addition & Subtraction Equations

- Addition Equations: Subtract the number being added to the variable from both sides of the equation

ex:  $4 + x = 18$

$$\begin{array}{r} 4 + x = 18 \\ -4 \quad -4 \\ \hline x = 14 \end{array}$$

- Subtraction Equations: Add the number being subtracted from the variable to both sides of the equation

ex:  $20 = a - 5$

$$\begin{array}{r} 20 = a - 5 \\ +5 \quad +5 \\ \hline 25 = a \rightarrow \boxed{a = 25} \end{array}$$

## One-Step Multiplication & Division Equations

- Multiplication Equations: Divide both sides of the equation by the number next to the variable

ex:  $7b = 28$

$$\begin{array}{r} 7b = 28 \\ \div 7 \quad \div 7 \\ \hline b = 4 \end{array}$$

- Division Equations: Multiply both sides of the equation by the number under the variable

ex:  $5 \cdot \frac{n}{5} = 10 \cdot 5$

$$\begin{array}{r} 5 \cdot \frac{n}{5} = 10 \cdot 5 \\ \times 5 \quad \times 5 \\ \hline n = 50 \end{array}$$

## Problem Solving

1. Read the problem. Identify the question that is being asked and the key information in the problem.
2. Plan how you are going to solve the problem and estimate the answer.
3. Solve the problem using the strategy of your choice.
4. Check your answer. Make sure your answer is reasonable and compare it to your estimate. Label your answer with appropriate units.

Evaluate each expression for  $a = 5$ ,  $b = 12$ ,  $c = 10$ , &  $d = 2$ .

71. $2b - a$	72. $d(ab - c)$	73. $3 + \frac{b}{d}$
74. $\frac{4a}{b + 4d}$	75. $2a^2 - c$	76. $b - c + d$

Solve each one-step equation.

77. $g + 3 = 17$	78. $r - 6 = 7$	79. $6b = 18$	80. $\frac{h}{q} = 3$
81. $5 = f - 8$	82. $48 = 12b$	83. $a + 24 = 83$	84. $17 + x = 23$
85. $10 = \frac{m}{5}$	86. $86.5 = f - 7.63$	87. $\frac{n}{6} = 11$	88. $\frac{3}{4}h = 12$

Solve each word problem using the method of your choice.

89. A fencing company charges \$22 per foot to install a wood fence. How much will it cost to install a wood fence around a rectangular pool area that is 20 feet wide and 38 feet long?

90. A 6 inch-tall plant grew  $\frac{3}{4}$  of an inch one week and twice as much the following week. How tall is the plant now?

91. Jack can read 45 pages of his book in one and a half hours. At that rate, how long will it take him to read the entire 300-page book?

92. Brian ordered 3 large cheese pizzas and a salad. The salad cost \$4.95. If he spent a total of \$47.60 including the \$5 tip, how much did each pizza cost? (Assume there is no tax).

93. A cookie recipe calls for  $3\frac{1}{4}$  cups of flour. The recipe makes 3 dozen cookies. How much flour is needed to make 144 cookies?

94. Ella has a box of chocolate candies. She gives  $\frac{1}{3}$  of the candies to her sister, 4 to her brother, and she eats the remaining 12 candies. How many chocolate candies were in the box originally?

Solve each word problem using the method of your choice.

95. 20% of the 520 students in Wendover Middle School were involved in school sports. Of those students, 12.5% were on the wrestling team. How many students were on the wrestling team?

96. A piggy bank contains some dimes and nickels. There are 8 more dimes than nickels in the bank. There is a total of \$1.40. How many of each type of coin are in the bank?

97. An elevator in a tall building goes up 7 floors, then down 9 floors, down 4 floors, up 8 floors, and down 2 floors. Now it is on floor 14. On what floor did the elevator start?

98. Jenna danced for 3 hours on Sunday, 2 hours on Monday and Tuesday, 1 hour on Thursday, 1.5 hours on Friday, and 2 hours on Saturday. She did not dance at all on Wednesday. What is the average number of hours she danced each day? Round your answer to the nearest tenth of an hour.

99. Jackie makes \$15.25/hour babysitting. George makes \$18.50/hour mowing the lawn. If Jackie babysits for 4 hours and George mows lawns for 3 hours, who makes more money? How much more does he/she make?

100. A box of 8 crayons costs \$0.96. How much does each crayon cost? At that unit price, how much would a box of 30 crayons cost?