Our Lady of Lourdes

CATHOLIC SCHOOL

2023

Summer Learning Packet

8th Grade

Our Lady of Lourdes † †
CATHOLIC SCHOOL

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 8th 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

Questions to answer while reading. Please write your answers in a Google Doc. When you are back in school in the fall, you will upload your responses to an assignment posted in Google Classroom.

From 1861-1865
1. On what were the northern and southern economies based?
2. How did the North's view of slaves differ from the South?

Prologue
1. Why were people celebrating across the north?
2. Foreshadowing is when the author gives advance sign or warning of what is to come in the future. What example of foreshadowing is used in the prologue?

Chapter 1 (Part 1 - pg. 9-20)
1. Why was John Wilkes Booth depressed?
2. Who is Mary Surratt?
3. How does the point of view affect the mood of this chapter?

Chapter 1 (Part 2 - pg. 20-31)
1. What was the role of each of the conspirators?
   a. Atzerodt: _____
   b. Powell: _____
   c. Herold: _____
   d. Booth: _____
2. What motivated Booth to plan a triple assassination to occur simultaneously?
3. Describe the Figurative Language used in the underlined part of this quote:
   a. "...<u>Booth and his henchmen planned like highway robbers</u>, to ambush Lincoln's carriage at gunpoint" (24).

Chapter 2
1. What surprised Booth has he approached the door that led directly to Lincoln?
2. Describe how the bullet struck Lincoln.
3. How does the ticking clock contribute to the rising action in this chapter?

Chapter 3
1. Describe the 3 problems Powell had.
2. What can you infer about Powell based on the events of this chapter?

Chapter 4 (Part 1 - pg. 60-69)
1. How did the people in the theater react after Lincoln was shot?
2. "His hard riding kept him (Booth) ahead of the news" (63). What does this statement mean?

Chapter 4 (Part 2 - pg. 69-77)
1. Why is Laura Keene remembered in history?
2. Why did Dr. Leale take great care in keeping Lincoln alive at Ford's Theater?

Chapter 5 (Part 1 - pg. 78-89)
1. How did the news of Lincoln's assassination spread? How does it contract to how news travels in today's time period?

Chapter 5 (Part 2 - pg. 90-100)
1. Why did Booth consider the Mudd farm his sanctuary?
2. Do you agree with Stanton removing Mary Todd Lincoln from Lincoln's bedside?

Chapter 6
1. Who succeeded president Lincoln?
2. How did Mudd react when he heard the news of Lincoln's assassination?
3. On page 105, Swanson writes, "The only sound in the room was the squeaking of the screws being tightened in the holes." How does this use of imagery contribute to the mood of this chapter?

Chapter 7
1. Why were the manhunters in Washington frustrated?
2. "The Union army never caught him in action - he was a river ghost to the boys in blue uniforms" (118). Describe the metaphor.

Chapter 8 & 9
1. How did Booth react to the new of Powell's attack on Seward?
2. "Every building lining the avenue wept with black crepe" (140). Identify and describe the personification and what it means.

Chapter 10
1. What did Mudd end up telling the calvary?
2. On page 146, Booth tried to give Thomas Jones money for his help. Even though he was considered penniless, why do you think Thomas refused to take the money?

Chapter 11 (Part 1 - pg. 151-163)
1. What did Herold confess to Jett?
2. "Lincoln's assassins had just walked into a trap" (63). Explain the impact & purpose this had in the story.

Chapter 11 (Part 2 - pg. 164-177)
1. Why did Booth want to die instead of going back to Washington?
2. On page 175, Booth said, "Tell Mother I die for my country." What inference about Booth can be made from this quote?

Chapter 12 & Epilogue
1. What are your final thoughts about Booth, his action, and the manhunt? Write at least 3 sentences.
2. On page 193, the author writes, "And yet, we still remember Booth. But he is not the hero." Do you think we should continue to talk and write about Booth and his notorious actions? Why or why not? Write at least 3 sentences.

Adding Integers

- <u>Negative + Negative</u>:
  Add the absolute values of the two numbers and make the answer negative.

ex: $-5 + (-9)$
$5 + 9 = 14 \rightarrow \boxed{-14}$

- <u>Negative + Positive (or Positive + Negative)</u>:
  Subtract the absolute values of the two numbers (larger minus smaller) and take the sign of the number with the greater absolute value.

ex: $-7 + 12$
$12 - 7 = 5$
12 > 7, so answer is positive
$\rightarrow \boxed{5}$

Subtracting Integers

1. Keep the first number the same

2. Change the subtraction sign to an addition sign

3. Change the sign of the second number

4. Use integer addition rules to solve the new addition problem

ex: $-3 - 9$
$-3 + (-9) = \boxed{-12}$

ex: $-7 - (-4)$
$-7 + 4 = \boxed{-3}$

Multiplying & Dividing Integers

1. Ignore the signs and multiply or divide as usual

2. Determine the sign of the answer using the following rules:
   - positive × or ÷ positive → positive
   - negative × or ÷ negative → positive
   - negative × or ÷ positive → negative
   - positive × or ÷ negative → negative

ex: $-3 \cdot (-5)$
$3 \cdot 5 = 15$
negative · negative → positive $\rightarrow \boxed{15}$

ex: $48 \div (-6)$
$48 \div 6 = 8$
positive ÷ negative → negative $\rightarrow \boxed{-8}$

Find the sum or difference.

1. -80 + 77	2. 77 + 160	3. -64 + (-33)	4. 104 – (-92)
5. -105 – (-122)	6. 185 – (-154)	7. -53 – (-59)	8. -6 + (-35)
9. 15 - (-26) - (-39)	10. -93 + 191 + (-179)	11. 18 + (-34) + 52	12. -50 - (-93) + (-17)

Find the product or quotient.

13. -60 ÷ 12	14. -194 ÷ (-2)	15. 88 · (-2)	16. -12 · 10
17. -10 · (-11)	18. 90 ÷ (-6)	19. 3 · (-59)	20. -7 · (-2)
21. -28 · (-6) ÷ (-24)	22. -56 · 14 ÷ (-8)	23. 108 ÷ (-12) · (-12)	24. -4 · (-17) ÷ 2

Adding & Subtracting Rational Numbers

Determine whether you should add or subtract using integer rules. Then add or subtract.

Decimals:
- Line up the decimal points
- Add or subtract and bring the decimal point down
- Use integer rules to determine the sign of the answer

ex: $-9.8 + 6.24$

neg + pos: subtract

$$\begin{array}{r} -9.80 \\ 6.24 \\ \hline 3.56 \end{array} \rightarrow \boxed{-3.56}$$

Fractions/Mixed Numbers:
- Find a common denominator and then add or subtract
- Borrow or convert an improper fraction answer, if necessary
- Use integer rules to determine the sign of the answer

ex: $5\frac{3}{4} - \left(-3\frac{7}{8}\right)$

$\rightarrow 5\frac{3}{4} + 3\frac{7}{8}$

pos + pos: add

$$\begin{array}{r} 5\frac{3}{4} = \frac{6}{8} \\ + \quad 3\frac{7}{8} = \frac{7}{8} \\ \hline 8 \quad \frac{13}{8} \end{array} \rightarrow \boxed{9\frac{5}{8}}$$

Multiplying & Dividing Rational Numbers

Determine the sign of the answer using integer rules. Then multiply or divide.

Multiplying Decimals:
- Ignore the decimal points. Multiply the numbers.
- Count the decimal places in the problem to determine the location of the decimal point in the answer.

ex: $-9.23 \cdot (-1.1)$

neg · neg = pos

$$\begin{array}{r} 9.23 \quad \leftarrow 2 \text{ dec places} \\ \times \quad 1.1 \quad \leftarrow 1 \text{ dec place} \\ \hline 923 \quad \text{3 dec places} \\ 9230 \quad \downarrow \\ \hline 10153 \end{array} \rightarrow \boxed{10.153}$$

Dividing Decimals:
- Move the decimal in the divisor to the end of the number
- Move the decimal in the dividend the same number of places and then bring it straight up in quotient

ex: $-5.2 \div 0.2$

neg ÷ pos = neg

$$0.2\overline{)52.} \quad \frac{26}{} \rightarrow \boxed{-26}$$

Multiplying Fractions:
- Convert mixed numbers to improper fractions.
- Cross-simplify if possible
- Multiply the numerators and multiply the denominators
- Simplify if necessary

ex: $-1\frac{3}{4} \cdot \frac{6}{14}$

neg · pos = neg

$\rightarrow \frac{7}{4} \cdot \frac{6}{14} = \frac{3}{4} \rightarrow \boxed{-\frac{3}{4}}$

Dividing Fractions:
- Convert mixed numbers to improper fractions
- Flip the second fraction to its reciprocal and multiply the two fractions
- Simplify if necessary

ex: $-\frac{1}{2} \div \left(-\frac{3}{8}\right)$

neg ÷ neg = pos

$\rightarrow \frac{1}{2} \cdot \frac{8}{3} = \frac{4}{3} \rightarrow \boxed{1\frac{1}{3}}$

Find the sum, difference, product, or quotient.

25. $38.61 + 36.841$	26. $1.755 - 1.23$	27. $0.71 \cdot 9.2$	28. $13.12 \div 0.1$
29. $3.651 - (-12.63)$	30. $-3.9 + (-7.6)$	31. $-14.846 \div 2.6$	32. $6 \cdot (-16.7)$
33. $26.474 - 14.527$	34. $-2.1 + 3.78$	35. $-6.15 \div (-8.2)$	36. $-12.8 \cdot (-4.88)$

Find the sum, difference, product, or quotient. Write your answer in simplest form.

37. $15\frac{1}{2} + 15\frac{1}{4}$	38. $18\frac{11}{20} - 17\frac{1}{2}$	39. $3\frac{3}{7} \div 5\frac{1}{3}$	40. $4\frac{1}{2} \cdot 2\frac{2}{5}$
41. $3\frac{1}{3} - 5\frac{1}{9}$	42. $5 \cdot \left(-1\frac{2}{5}\right)$	43. $-7\frac{3}{5} + \left(-3\frac{5}{6}\right)$	44. $-2\frac{1}{12} \div \frac{3}{8}$
45. $9 \div \left(-4\frac{1}{2}\right)$	46. $-18 + 3\frac{4}{5}$	47. $2\frac{5}{6} \cdot \left(-2\frac{2}{3}\right)$	48. $-4\frac{7}{10} - 3\frac{2}{5}$

Order of Operations

Evaluate numerical expressions that contain multiple operations in the following order:

1. Grouping Symbols (complete operations in parentheses, brackets, etc.)

2. Exponents

3. Multiplication & Division (left to right)

4. Addition & Subtraction (left to right)

ex: $-2(-5 + 9)^2 - (-8) + 9$

$-2(4)^2 - (-8) + 9$

$-2(16) - (-8) + 9$

$-32 - (-8) + 9$

$-24 + 9$

$\rightarrow \boxed{-15}$

Evaluating Algebraic Expressions

1. Substitute the given values for the variables in the expression

2. Evaluate the expression using the order of operations

ex: evaluate

$a - bc + b^2$

for $a = -7, b = 5, c = -1.5$

$-7 - (5)(-1.5) + 5^2$

$-7 - (5)(-1.5) + 25$

$-7 - (-7.5) + 25$

$0.5 + 25$

$\rightarrow \boxed{25.5}$

Evaluate the numerical expression. Be sure to use the order of operations!

49. $78 + (-2) \cdot (-56)$	50. $-65 + \frac{6}{-3} + 40$	51. $-94 - [2 - 3(24 - 12)]$	52. $43 + (-23) - (-57)$
53. $-15 - (-11) + 5 \cdot (-4)^3$	54. $-26 - (-64) + (-3)^4$	55. $-84 \div 4 + (-20)$	56. $-56 + (-50) + (-7) \cdot (-9)$
57. $-7.6 - 3 + 2.1 \cdot (-8)$	58. $-\frac{2}{3} + \frac{5}{6} \div \frac{1}{2}$	59. $-8 + 3(-2.7 + 4.23)$	60. $-3\frac{1}{2} \cdot \left(-2\frac{3}{4}\right) + \left(-4\frac{1}{4}\right)$

Evaluate the algebraic expression for $a = -12$, $b = 6$, $c = -4$, and $d = 3$.

61. $a - b + c$	62. $b - cd$	63. $b(cd - a)$
64. $\frac{b}{c} - d$	65. $bd + ac$	66. $\frac{a}{d} + c^2$

One-Step Equations

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

  ex: $y + 23 = -9$
  $ -23 -23$
  $$y = -32$$

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

  ex: $w - 13 = -5$
  $ +13 +13$
  $$w = 8$$

- <u>Multiplication Equations:</u>
  Divide both sides of the equation by the number next to the variable

  ex: $\dfrac{6x}{6} = \dfrac{-18}{6}$
  $$x = -3$$

- <u>Division Equations:</u>
  Multiply both sides of the equation by the number under the variable

  ex: $\dfrac{h}{3 \cdot 3} = 4 \cdot 3$
  $$h = 12$$

Two-Step Equations

- Undo operations one at a time with inverse operations, using the order of operations in reverse
  (i.e. undo addition/subtraction before multiplication/division)

- Be sure to always do the same thing to both sides of the equation!

ex: $7x - 4 = -32$
$ +4 +4$
$\dfrac{7x}{7} = \dfrac{-28}{7}$
$$x = -4$$

ex: $\dfrac{j}{5} + 13 = 15$
$\phantom{\dfrac{j}{5}} -13 -13$
$\dfrac{j}{5} \cdot 5 = 2 \cdot 5$
$$j = 10$$

ex: $\dfrac{b + 7}{3} \cdot 3 = -2 \cdot 3$
$b + 7 = -6$
$ -7 -7$
$$b = -13$$

Solve the one-step equation.

67. $19 + j = -34$	68. $m - 26 = 13$	69. $\frac{x}{5} = -3$	70. $12f = 216$
71. $g - (-31) = -7$	72. $\frac{h}{9} = 13$	73. $b + (-3) = -9$	74. $-4w = -280$

Solve the two-step equation.

75. $5m - 3 = 27$	76. $7 + \frac{y}{2} = -3$	77. $4 + 3r = -8$	78. $\frac{1}{2}p - 4 = 7$
79. $\frac{k + 8}{3} = -2$	80. $\frac{f}{5} - (-13) = 12$	81. $-15 - \frac{g}{3} = -5$	82. $-8 + 4m = 2$
83. $-18 - \frac{3}{4}v = 3$	84. $\frac{-5 + n}{4} = -1$	85. $3.5m + 0.75 = -6.25$	86. $2y + 3 = 19$

Unit Rates

- Convert a rate to a unit rate by dividing the numerator by the denominator
  - Write your answer as a fraction with labels for the both the numerator and denominator OR as one number labeled with the first unit "per" the second unit

ex: Find the unit price:

$$\frac{\$2.99}{12 \text{ eggs}}$$

$2.99 \div 12 \approx 0.25$

→ $\boxed{\frac{\$0.25}{1 \text{ egg}} = \$0.25 \text{ per egg}}$

Solving Proportions

1. Set cross-products equal to each other

2. Solve the equation for the given variable

ex: $\frac{5}{b} = \frac{4}{10}$

$5 \cdot 10 = 4b$

$\frac{50}{4} = \frac{4b}{4}$ → $\boxed{b = 12.5}$

Proportion Word Problems

1. Set up a ratio with what you know

2. Set up a second ratio using a variable for the unknown quantity
   - Be sure that the units in the numerator match the units in the numerator of the first ratio and the units in the denominator match the units in the denominator of the first ratio.

3. Make a proportion by setting the two ratios equal to each other

4. Solve the proportion.

ex: A recipe calls for 2 cups of sugar for 36 cookies. How many cups of sugar are needed to make 48 cookies?

$$\frac{2 \text{ cups}}{36 \text{ cookies}} = \frac{x \text{ cups}}{48 \text{ cookies}}$$

$2 \cdot 48 = 36x$

$\frac{96}{36} = \frac{36x}{36}$

$\boxed{x = 2\frac{2}{3} \text{ cups}}$

Convert to a unit rate.

87. $\frac{513 \text{ miles}}{9 \text{ hours}}$	88. $\frac{180 \text{ words}}{5 \text{ minutes}}$	89. $\frac{\$2.53}{8 \text{ oz}}$

Solve the proportion.

90. $\frac{h}{6} = \frac{20}{24}$	91. $\frac{5}{7} = \frac{c}{14}$	92. $\frac{6}{8} = \frac{21}{b}$	93. $\frac{30}{j} = \frac{26}{39}$
94. $\frac{5}{k} = \frac{15}{20}$	95. $\frac{32}{112} = \frac{a}{14}$	96. $\frac{16}{7} = \frac{18}{g}$	97. $\frac{w}{60} = \frac{15}{200}$

Use a proportion to solve the word problem.

98. A cookie recipe calls for 2 eggs and 3 cups of flour. You only have 1 egg, so you have to cut the recipe. How much flour should you use?	99. Jack can run 2 miles in 15 minutes. At that rate, how far would you expect him to run in an hour?	100. Sue read 15 pages of her book in 25 minutes. At that rate, how long will it take her to read the next 10 pages?	101. The ratio of cats to dogs at the park was 1:4. If there were 12 dogs, how many cats were at the park?
102. If 2 pounds of apples cost $2.60, how much would 5 pounds of apples cost?	103. If you burn 184 calories running 2 miles, how many calories would you burn if you run 5 miles?	104. In a shipment of 300 parts, there are 12 defective parts. How many defective parts would you expect to find in a shipment of 1,000 parts?	105. The ratio of 12-year-olds to 13-year-olds in Mr. Wu's class is 5:3. If there are 24 students in the class, how many students are 13 years old?

Solving Percent Problems

Using a Proportion:
- Set up a proportion in the following format & solve

$$\frac{\%}{100} = \frac{part}{whole}$$

Using an Equation:
- Set up an equation in the following format & then solve

$$part = percent \times whole$$

(The percent must be in decimal or fraction form in the equation!)

ex: 25 is what percent of 500?

proportion: $\frac{x}{100} = \frac{25}{500}$ → $500x = 2500$
$x = 5$

equation: $25 = 500x$ → $0.05 = x$
→ $x = \boxed{5\%}$

ex: What is 15% of 88?

proportion: $\frac{15}{100} = \frac{x}{88}$ → $1320 = 100x$
$13.2 = x$

equation: $x = 0.15(88)$ → $x = 13.2$
→ $x = \boxed{13.2}$

ex: 18 is 30% of what number?

proportion: $\frac{30}{100} = \frac{18}{x}$ → $30x = 1800$
$x = 60$

equation: $18 = 0.3x$ → $60 = x$
→ $x = \boxed{60}$

Percent Applications

Percent of Change
- Set up a proportion in the following format & solve

$$\frac{\%}{100} = \frac{amount\ of\ change}{original\ amount}$$

Tax:
- Find the amount of tax using a proportion or equation. Then add the tax to the original amount to find the total cost.

Discount:
- Find the amount of the discount using a proportion or equation. Then subtract that amount from the original price to find the sale price.

Simple Interest:
- Use the equation $I = PRT$
  - I = interest, P = principal (starting amount), R = interest rate, T = time (in years)

ex: Enrollment in 2015 was 4,850. In 2020, enrollment was 5,122. Find the percent of change.

$\frac{x}{100} = \frac{272}{4,850}$ ← amt of change: $5,122 - 4,850 = 272$
← original enrollment
→ $x \approx \boxed{5.6\%\ increase}$

ex: Find the total cost of a $8.95 book with 7% sales tax.

$x = 0.07 \cdot 8.95$ → $x \approx 0.63$
$8.95 + 0.63 = \boxed{\$9.58}$

ex: A $18.60 shirt is on sale for 30% off. Find the sale price.

$\frac{30}{100} = \frac{x}{18.60}$ → $x \approx 5.58$
$18.60 - 5.58 = \boxed{\$13.02}$

ex: $5,000 is kept in an account with a 1.5% interest rate for 10 years. How much simple interest is earned? ← convert rate to decimal

$I = 5,000 \cdot 0.015 \cdot 10 = \boxed{\$750}$

Solve the percent problem.

106. Find 15% of 85.	107. 6 is 75% of what number?	108. 40 is what percent of 320?	109. What is 20% of 45?
110. 70 is what percent of 350?	111. Find 33.3% of 81.	112. 9 is 45% of what number?	113. What percent of 60 is 12?
114. 5% of the lights on the light string are out. If there are 100 lights on the string, how many are out?	115. There were 27 students in Jerome's class last year. This year there are 30 students in his class. Find the percent of change.	116. A $58 camera is on sale for 20% off. Find the sale price.	117. A $60 camera is on sale for $50. Find the percent of change.
118. Find the total price of a $14.00 shirt including the 7% sales tax.	119. How much simple interest is earned after 10 years if $200 is put in an account with a 1.25% interest rate?	120. Your bill at a diner comes to $45. If you want to leave the waitress a 20% tip, how much money should you give her?	121. Find the final price of a $58 video game that is on sale for 15% off, after the 6.5% sales tax is included.

Probability

Probability of Simple Events

$$P(\text{event}) = \frac{\text{\# of favorable outcomes}}{\text{\# of possible outcomes}}$$

ex: You roll a number cube. Find P(3).
When you roll a number cube, there are
6 possible outcomes:
(1, 2, 3, 4, 5, or 6)
There is 1 favorable outcome: (rolling a 3)

$$\rightarrow \quad P(3) = \boxed{\frac{1}{6}}$$

Probability of Compound Events

- Independent Events
  $$P(A \text{ and } B) = P(A) \cdot P(B)$$

- Dependent Events
  $$P(A \text{ then } B) = P(A) \cdot P(B \text{ after } A)$$

ex: You roll 2 number cubes. Find P(3, odd).

$$P(3) \cdot P(\text{odd}): \quad \frac{1}{6} \cdot \frac{3}{6} = \boxed{\frac{1}{12}}$$

ex: There are 3 red crayons and 4 blue crayons in a bag. You pick one out without looking, do not replace it, and then pick another. Find P(red, red)

$$P(\text{red}) \cdot P(\text{red after picking red}):$$
$$\frac{3}{7} \cdot \frac{2}{6} = \boxed{\frac{1}{7}}$$

Angle Relationships

- **Adjacent Angles:** angles that share a vertex and a common side

ex:
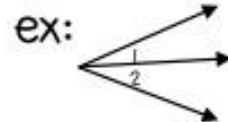
∠1 and ∠2 are adjacent because they share a vertex and side.

- **Complementary Angles:** angles with a sum of 90°

ex:
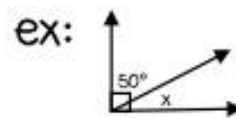
The angles are complementary because they form a right angle, so
50 + x = 90
$$\rightarrow \boxed{x = 40°}$$

- **Supplementary Angles:** angles with a sum of 180°

ex:

The angles are supplementary because they form a line, so
x + 47 = 180
$$\rightarrow \boxed{x = 133°}$$

- **Vertical Angles:** a pair of opposite angles formed where two lines intersect. Vertical angles are congruent.

ex:
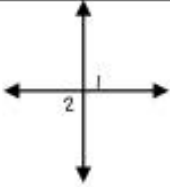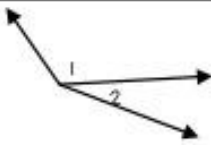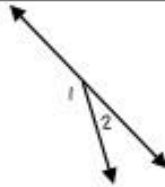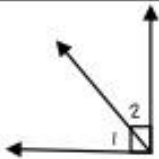
The angles are vertical because they are across from each other, so
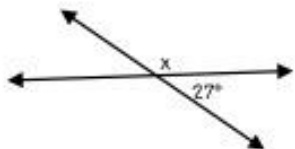$$\boxed{x = 38°}$$
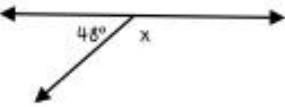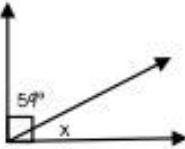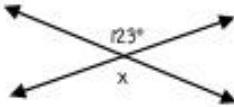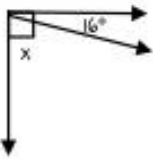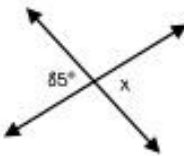
A bag of marbles contains 8 blue marbles, 6 red marbles, and 4 green marbles. Find the probability of each event if you choose marbles without looking in the bag.

122. P(green)	123. P(red)	124. P(blue)	125. You pick a marble, replace it, and then pick another. Find P(blue, blue).
126. You pick a marble, replace it, and then pick another. Find P(red, green).	127. You pick a marble, do not replace it, and then pick another. Find P(blue, blue).	128. You pick a marble, do not replace it, and then pick another. Find P(red, green).	129. You pick a marble, do not replace it, and then pick another. Find P(green, green).

Identify the relationship between ∠1 and ∠2.
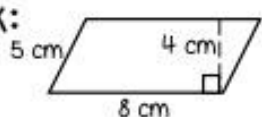
130.	131.	132.	133.
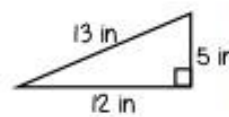
Find the value of x.
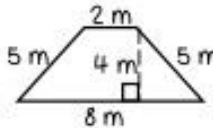
134.	135.	136.
137.	138.	139.
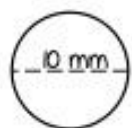
2-Dimensional Geometry Formulas

- Perimeter is the distance around a polygon

  - Perimeter of Any Figure: P = sum of side lengths

- Circumference is the distance around a circle

  - $C = \pi d$

- Area is the space inside a figure

  - Area of Parallelogram: $A = bh$

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

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

  - Area of Circle: $A = \pi r^2$

ex:

5 cm   4 cm   8 cm
→ $P = 5 + 8 + 5 + 8$
→ P = 26 cm
$A = 8 \cdot 4$
→ A = 32 cm²

ex:

13 in   5 in   12 in
→ $P = 5 + 12 + 13$
→ P = 30 in
$A = \frac{1}{2} \cdot 5 \cdot 12$
→ A = 30 in²

ex:

2 m   5 m   4 m   5 m   8 m
→ $P = 5 + 2 + 5 + 8$
→ P = 20 m
$A = \frac{1}{2} \cdot 4(2 + 8)$
→ A = 20 m²

ex:

10 mm
$C = 10 \cdot \pi$
→ $C \approx 31.4$ mm
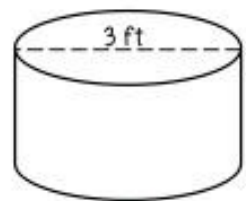$A = \pi \cdot 5^2$
→ $A \approx 78.5$ mm²

Abbreviations used in Formulae:

P = perimeter, C = circumference, d = diameter, b = base, h = height, r = radius

3-Dimensional Geometry Formulas

- Volume is the capacity of a 3-dimensional figure

  - Volume of Rectangular Prism: $V = lwh$

  - Volume of Cylinder: $V = \pi r^2 h$

- Surface Area is the sum of the areas of all the faces on a 3-dimensional figure

  - Surface Area of Rectangular Prism:
    $SA = 2lw + 2lh + 2wh$

  - Surface Area of Cylinder: $SA = 2\pi r^2 + 2\pi rh$

ex:

7 cm   9 cm   18 cm
$V = 18 \cdot 9 \cdot 7$
→ V = 1,134 cm³
$SA = 2 \cdot 18 \cdot 9 + 2 \cdot 9 \cdot 7 + 2 \cdot 18 \cdot 7$
→ SA = 702 cm²

ex:

3 ft   2 ft
$V = \pi \cdot 1.5^2 \cdot 2$
→ $V \approx 14.1$ ft³
$SA = 2 \cdot \pi \cdot 1.5^2 + 2 \cdot \pi \cdot 1.5 \cdot 2$
→ $SA \approx 33.0$ ft²
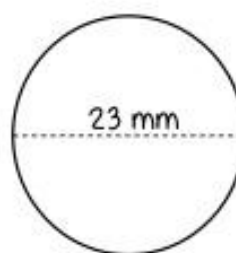
Abbreviations used in Formulae:

V = volume, SA = surface area, l = length, w = width, h = height, r = radius

Find the perimeter (or circumference) and area of the given shape. Round to the nearest tenth if necessary.
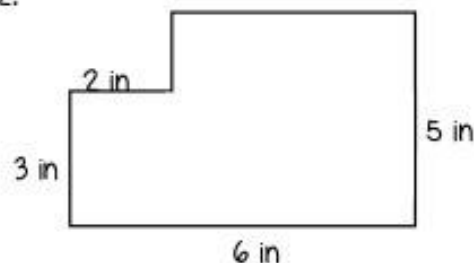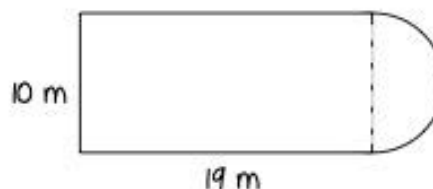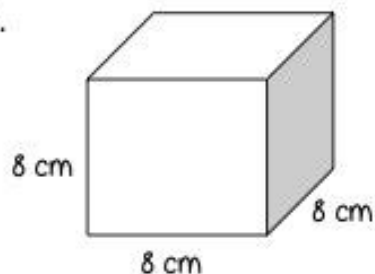
140.

15 cm

5 cm   4 cm   5 cm
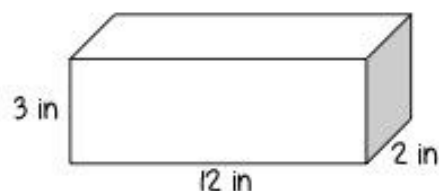
9 cm

141.

23 mm

142.

2 in

3 in

5 in

6 in

143.

10 m

19 m
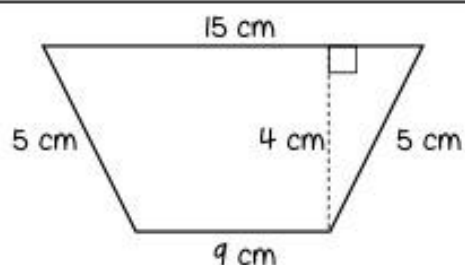
Find the surface area and volume of the given figure. Round to the nearest tenth if necessary.

144.

8 cm

8 cm

8 cm

145.

3 in

12 in

2 in

146.

7 cm

3 cm

147.

9 mm

13 mm