Saint Anthony of Padua School
Junior High Summer Packet
SY: 2024-2025

Dear Junior High Parents,

Congratulations to your children for finishing the 2024 - 2025 school year! It has been a joy teaching them and watching them grow these past ten months. We also welcome the incoming 6th graders to Junior High as they continue their journey here at St. Anthony of Padua!

Please review the Junior High Summer Projects , which are required assignments for each student. The completed work will be due on the first day of school and will count as the first grades for Reading, Language, Math, Science, Social Studies, and Religion.

The *Junior High Supply List* is also provided so that you can begin to purchase materials for the school year. Please note that all Junior High students will be required to use Chromebooks instead of iPads for school.

In August/September, we will review Junior High policies regarding the following topics (*found in Parent/Student Handbook online):
- ❒ Homework/Classwork
- ❒ Conduct
- ❒ Uniforms
- ❒ Classroom procedures
- ❒ Rotations and schedules

We appreciate the support you continue to give to your child's education. Please feel free to email any of us with any questions or concerns. You can find our contact information on the Teacher Blogs at stanthonygardena.org . Thank you and enjoy your summer!

St. Anthony of Padua, pray for us!

Saint Anthony of Padua School
7th Summer Packet
SY: 2024-2025

Dear Parents and Students of the Class of 2026,

First, congratulations on finishing the 2023-2024 school year! I hope all of you enjoy your summer and come back in August refreshed, focused and prepared for the joys and challenges of 7th grade.

As you may know, part of the preparation for 7th grade English Language Arts is summer reading. Every student is required to read the novel *The Lion, the Witch, and the Wardrobe* by C.S. Lewis. The book's content is fitting for this age group, and we will use it at the beginning of the year to review the literary elements. Our discussions and analysis in August and early September will focus on the elements of plot, setting, theme, and characterization that set the foundation for the year's curriculum. ***PLEASE NOTE: The Junior High Supply List asks for The Chronicles of Narnia Set, which includes The Lion, the Witch, and the Wardrobe. You do not need to order this separately!***

To be completely prepared for the start of the school year, the students need to arrive at school with the following:
- ***The Lion, the Witch, and the Wardrobe*** **(Worksheet Packet)**
- Social Studies Current Events (2)
- Handwriting Book pp. 1- 40
- Math Packet
- Science Project
- Religion Mass Reflections (2)

> *These will be the first graded assignments for the year, so please make sure that they are completed neatly and thoroughly.*

The students have been briefed on these requirements and understand how to create a plot diagram. The students will use their character notes to create character profiles once they return to school. There will be a comprehension test on the novel as well.

Thank you for your time and support. The students will enjoy the novel and the analysis we do in class. The theme of the story is relevant and the novel is a great opportunity to prepare the students for the upcoming year.
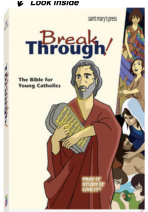
Sincerely,

Ms. Jessica Griggs

JH Math / 7th Grade Homeroom

Email: **jessica.griggs@stanthonygardena.org**

Website: http://www.stanthonygardena.org/seventh-grade/

Saint Anthony of Padua School
Junior High Supply List
SY: 2024-2025

Personal Supply List	Homeroom Community Supplies
- Chromebook - Pencil pouch **only** - Wood or mechanical pencil (pack of 12+ lead) - Erasers - Pens (Blue or Black + Red) - Highlighters (3) - Colored pencils (pack of 12) - White-out tape - Scissors - Whiteboard (9" x 12") - small white board eraser - Expo white board markers - headphones - Notecards - watercolor paint palette - Personal Hygiene Kit (may purchase or personalized) 1 rosary with case / pouch - Emergency Kit - Large Ziplock Bag with 2-3 pint sized bottled and 2-23 non-perishable snacks.)	2 ream copy paper (white) 1 ream colored paper (any color) 3 pk clorox wipes 3 pk hand wipes / baby wipes 3 pk tissue box (kleenex) - Expo Whiteboard Markers 1 liquid glue **Homeroom / Classroom Wishlist** - Blue painter's tape - Gallon Size Ziploc Bag 8.5 x 11 white cardstock paper 8.5 x 11 colored cardstock paper 8.5 x 11 sticker paper
Religion & Science	**Math**
- Bible - https://www.smp.org/product/4141/Breakthrough/ 1 5-Star Flex 1 inch Hybrid Notebinder (blue) - College Ruled Paper (100 count)	1 White Binder(s) - College Ruled Papers **ELA & History** ❒ Novels (*available online at amazon.com) **6th Grade:** *Wonder* by R.J. Palacio (Summer Project) **7th Grade:** - The Lion, the Witch, and the Wardrobe by C.S. Lewis (Summer Reading in the Narnia book set) **8th Grade:** - The 7 Habits of Highly Effective Teens by Sean Covey (Summer Reading) ❒ 1 Spiral 70-page Notebook (color - BLACK) ❒ 1½-inch 3-ring View Binder (color - BLACK) ❒ 5-tab Dividers for binder (any color)

Comprehension – Answer the following questions based on Chapter 1.

1. Where did the children live before this story began?

   _____

2. Why was Edmund bad-tempered the first night at the Professor's house?

   _____

3. How did the adventures begin?

   _____

4. What first made Lucy realize that something queer was happening in the wardrobe?

   _____

5. What did she think that convinced her it was safe to go on and explore?

   _____

6. What was the source of the light in the wood?

   _____

Critical Thinking

1. What is your first impression of each child's personality?

2. What do you think about Lucy's decision to enter the wood alone – was it safe, brave, foolish? Explain why you feel as you do.

Comprehension – Answer the following questions based on Chapter 2.

1. What does Mr. Tumnus's phrase "Daughter of Eve" mean?

    _____

2. How did the faun convince Lucy to come to his cave?

    _____

3. How did he entertain her after they had eaten?

    _____

4. What happened when Lucy said she had to go?

    _____

5. What had Mr. Tumnus promised to do with Lucy?

    _____

6. What did he fear would happen to him if he failed to keep his promise?

    _____

7.   Why did he decide not to keep the promise anyway?

    _____

Critical Thinking

1. Why do you think Lucy felt comfortable in the faun's cave?

2. Why do you think it took Lucy so long to understand the danger she was in?

3. What do you think about her behavior toward Mr. Tumnus after she realized what he had planned to do?

Comprehension – Answer the following questions based on Chapter 3.

1. Why was Lucy surprised that her siblings hadn't been wondering where she was?

   _____

2. What did they find when they looked into the wardrobe?

   _____

3. Why didn't Lucy make up with the others by saying she had just made up the story of her adventure?

   _____

4. Why should the next few days have been delightful, and why did Lucy not enjoy them?

   _____

5. Why did she not mean to hide in the wardrobe during hide-and-seek?

   _____

6. Why did Edmund follow her into the wardrobe?

   _____

7. What was his first clue that something unusual was happening?

   _____

8. Why did he think Lucy didn't answer his call?

   _____

Comprehension – Answer the following questions based on Chapter 4.

1. How did Edmund feel when the queen first invited him to sit with her?

   _____

2. What did he want as he ate the Turkish Delight?

   _____

3. What was the queen especially interested in learning about his family?

   _____

4. What was unusual about this particular Turkish Delight?

   _____

5. What did the queen say she'd like to do with Edmund?

   _____

6. What was the condition for her carrying out her idea?

   _____

7. What did the queen tell Edmund about fauns?

   _____

8. How did Lucy feel about Edmund having got into Narnia, too?

   _____

9. How did Edmund feel about it himself?

   _____

Critical Thinking

Comprehension – Answer the following questions based on Chapter 5.

1. When did Edmund decide what to do?

   _____

2. How much older than Lucy was Edmund?

   _____

3. How did Peter say Edmund had always behaved?

   _____

4. What did Peter and Susan decide to do about their concern over Lucy?

   _____

5. How did the Professor respond to their account of Lucy's story?

   _____

6. What was the main reason Susan and Peter didn't believe Lucy?

   _____

7. What did the Professor say were the only three logical possibilities?

   _____

8. What did he advise them to do?

   _____

9. What was unusual about the Professor's house?

   _____

Comprehension – Answer the following questions based on Chapter 6.

1. What were the first clues that something strange was happening inside the wardrobe?

   _____

2. How did the fur coats look on the children?

   _____

3. How did Edmund give away the fact that he had been in Narnia before?

   _____

4. What did the children find at the Faun's cave?

   _____

5. Who was the chief of the secret police?

   _____

6. Why did the siblings decide not to just go home?

   _____

7. What was Peter worried about?

   _____

8. What did Edmund suggest about the robin?

   _____

9. Why did Peter decide to trust the bird?

   _____

Comprehension – Answer the following questions based on Chapter 7.

1. What was unusual about the animal the children saw?

   _____

2. What did the Beaver say about the trees?

   _____

3. How did they know he was a friend?

   _____

4. How did the name of Aslan affect each of the children?

   _____

5. How long did it take to reach the Beaver's house?

   _____

6. What was Mrs. Beaver doing when they arrived?

   _____

7. What did they have for dinner?

   _____

8. Why was Mr. Beaver pleased that it was snowing again?

   _____

Comprehension – Answer the following questions based on Chapter 8.

1. What had happened to Mr. Tumnus?

   _____

2. Why did Peter believe they had to try to help the faun?

   _____

3. Who is Aslan?

   _____

4. What did Mrs. Beaver say about anyone who could appear before Aslan and not be nervous?

   _____

5. Where were the children supposed to meet Aslan?

   _____

6. When was Edmund's absence noticed?

   _____

7. Why did Mr. Beaver say there was no point in looking for him?

   _____

8. What did Mrs. Beaver say was the only chance of saving either Edmund or the other children?

   _____

Comprehension – Answer the following questions based on Chapter 9.

1. Why hadn't Edmund enjoyed dinner?

   _____

2. When did he actually slip out of the Beavers' house?

   _____

3. What were some of the excuses he made up about the Witch in his own mind?

   _____

4. What cheered him up as he was walking?

   _____

5. How was he able to find his way?

   _____

6. What frightened him just inside the courtyard gate?

   _____

7. What silly thing did he do when he recovered from his fright?

   _____

8. How did the Witch greet him?

   _____

Comprehension – Answer the following questions based on Chapter 10.

1. What was Mrs. Beaver doing while the others were bundling up?

   _____

2. What hope did she say they had?

   _____

3. Why did Mr. Beaver say they should stay down in the valley?

   _____

4. What awakened everyone from their sleep in the cave?

   _____

5. Why did Mr. Beaver rush out when he heard the noise?

   _____

6. What was Father Christmas like, and how did he affect the children?

   _____

7. List the gifts he gave to each member of the party.

   _____

Comprehension – Answer the following questions based on Chapter 11.

1. What did the Dwarf bring Edmund to eat and drink?

   _____

2. What did the Witch order the wolf to do?

   _____

3. How did Edmund feel riding in the Witch's sledge?

   _____

4. Why did the Witch stop suddenly?

   _____

5. What did she do to the party of animals?

   _____

6. Why did the sledge stop running well?

   _____

7. What did the Witch, the Dwarf, and Edmund do when the sledge couldn't go any further?

   _____

8. What did the Dwarf say had happened?

   _____

9. How did the Witch respond to his statement?

   _____

Comprehension – Answer the following questions based on Chapter 12.

1. What did the children understand had happened when the magic spring began?

   _____

2. Describe the Stone Table.

   _____

3. How did the Beavers and the children feel when they saw Aslan?

   _____

4. How did Lucy think Aslan's face looked?

   _____

5. What did Aslan show Peter?

   _____

6. What did Peter see after he heard the horn?

   _____

7. How did he feel, and what did he do?

   _____

8. What did Aslan send the other creatures to do?

   _____

Comprehension – Answer the following questions based on Chapter 13.

1. What did the Dwarf suggest the Witch should do with Edmund?

   _____

2. What did the Witch intend to do with him?

   _____

3. How did the Witch and the Dwarf avoid being captured when Edmund was rescued?

   _____

4. What did Aslan say when he brought Edmund to his siblings?

   _____

5. How did the Witch's appearance affect the group of Aslan's supporters?

   _____

6. What did Mrs. Beaver notice about the meeting between Aslan and the Witch?

   _____

7. Why had the Witch come?

   _____

Comprehension – Answer the following questions based on Chapter 14.

1. Why did Aslan say they had to move camp?

   _____

2. What did Aslan say about his presence in the battle that was sure to come?

   _____

3. What did the girls see when they got up in the middle of the night?

   _____

4. What did Aslan say when they asked to go with him?

   _____

5. How did the Witch's followers react to Aslan's appearance?

   _____

6. What was done to Aslan before he was put on the Stone Table?

   _____

7. How did Aslan look just before he was killed?

   _____

Comprehension – Answer the following questions based on Chapter 15.

1. Why couldn't Susan and Lucy untie the ropes on Aslan's body?

_____

2. What two things did Lucy notice after it seemed that hours had gone by?

_____

3. What were the mice doing?

_____

4. What sound did the girls hear, and then what did they see?

_____

5. What had the Witch not known?

_____

6. How did the girls feel after the wild romp with Aslan?

_____

7. When did they reach the Witch's home?

_____

Comprehension – Answer the following questions based on Chapter 16.

1. What did Lucy think the Witch's courtyard was like at first?

   _____

2. What did Aslan do to bring the statues back to life?

   _____

3. How did they all get out of the Witch's courtyard?

   _____

4. What did Mr. Tumnus tell Lucy about the giant Rumblebuffin?

   _____

5. What was the change in the noise that gave Lucy an odd feeling?

   _____

6. What was happening in the center of the battlefield?

   _____

Comprehension – Answer the following questions based on Chapter 17.

1. What had Edmund done that had kept the Witch from overpowering Aslan's forces?

   _____

2. What did Aslan do in the midst of the celebration?

   _____

3. What names were given to the children as they grew and changed over the years?

   _____

4. How did they happen to find the lamp post in the wood?

   _____

5. Why did they decide not to turn back at that point?

   _____

6. How did the Professor react to their story?

   _____

WHAT'S GOING ON?

Current Event #1

Date of event: _____

Location of event: _____

Summarize the main points of this current event in your own words. (Complete paragraph)

_____
_____
_____
_____
_____

Do you think this is an important issue? Why? (Complete paragraph)

_____
_____
_____
_____
_____

Write a prayer concerning this event.

_____
_____
_____
_____
_____

WHAT'S GOING ON?

Current Event #2

Date of event: _____

Location of event: _____

Summarize the main points of this current event in your own words. (Complete paragraph)

_____
_____
_____
_____
_____

Do you think this is an important issue? Why? (Complete paragraph)

_____
_____
_____
_____
_____

Write a prayer concerning this event.

_____
_____
_____
_____
_____

MASS REFLECTION #1
DATE: _____

PRE-MASS REFLECTION:
1. What are the 2-3 things that are dominating your attention and thoughts today? What can you ask of God in the Liturgy to address these things?

2. The Mass is an opportunity to receive forgiveness of venial sins. Are there people who you have hurt in some way by your words, actions, or failure to act?

3. The word eucharist means "thanksgiving." What are you most thankful for today?

POST-MASS REFLECTION
1. What experiences during the Mass did you find relevant to your current situation and life?

2. Reflections on the Liturgy of the Word: What word or phrase jumped out at you in today's reading?

3. The name Mass comes from the Latin missa, which means to "go forth" and is taken from the final words of the concluding rite. What are the greatest needs that you see in your everyday life? Empowered with the love of God in the Eucharist, what will you do to help meet those needs?

MASS REFLECTION #2
DATE: _____

BEFORE MASS REFLECTION:

1. Has God been at work in your daily life? What evidence is there that God is communicating with you daily? How do you expect this communication to continue during the Liturgy?

2. The Mass is an opportunity to receive forgiveness of venial sins. What personal weaknesses can God take over for you today?

3. The word eucharist means "thanksgiving." As a celebration of thanksgiving, what has God done for you in your lifetime that you can thank him for today?

POST-MASS REFLECTION:

1. What was the holiest experience you had during Mass?

2. Reflections on the Liturgy of the Word: What did this reading remind you of in your life at this particular moment?

3. The name Mass comes from the Latin missa, which means to "go forth" and is taken from the final words of the concluding rite. What are the greatest needs that you see in your everyday life? Empowered with the love of God in the Eucharist, what will you do to help meet those needs?

Adding Integers

<u>Adding Integers with the Same Signs</u>:
1. **Add** the absolute values of the numbers (without their signs).
2. **Keep the sign** (either positive or negative) of both numbers.

<u>Adding Integers with Different Signs</u>:
1. **Subtract** the absolute value of the numbers (without their signs) having the largest number on top.
2. Keep the **sign of the largest absolute value**. (larger number determines the sign)

EXAMPLES:

Same Signs:	Different Signs:
7 + 10 = 17	4 + (-9) = -5
-6 + (-5) = -11	-7 + 18 = 11

Find each sum.

1. 21 + 15	2. -11 + 81
3. -1 + 39	4. -8 + (-24)
5. 90 + (-79)	6. 31 + 96
7. 25 + (-90)	8. 15 + 31 + (-20)
9. 8 + 41 + 35	10. 18 + (-80) + (-45)

Subtracting Integers
SAME, CHANGE, CHANGE

When Subtracting ANY Numbers:
1. Change any minus sign to a plus.
2. Change the sign of the number immediately **after** each minus to its opposite (change a positive number to a negative and vice-versa).
3. Follow the rules for adding integers.

EXAMPLES:

Two Numbers:
-4 – 1 →
-4 **+** (**-1**) = -5

More Than Two:
6 – 1 – (-3) →
6 **+** (**-1**) **+ 3** = 8

Find each difference.

1. 39 – 18	2. 65 – 72
3. -85 – (-42)	4. -15 – (-86)
5. -21 – 24	6. -15 – (-57)
7. 652 – (-57)	8. 346 – 865
9. -8 – (-4) – (-6)	10. 90 – (-26) – (-48)

Multiplying/Dividing Integers

When Multiplying ANY Numbers:
1. **Multiply** or **divide** the absolute values of the numbers.
2. For the **sign of the product/quotient**, follow the rules below.
   - Positive x Positive = Positive   Positive ÷ Positive = Positive
   - Negative x Negative = Positive   Negative ÷ Negative = Positive
   - Positive x Negative = Negative   Positive ÷ Negative = Negative
   - Negative x Positive = Negative   Negative ÷ Positive = Negative
   - If there are an even number of negative integers being multiplied/divided, the product will be positive.
   - If there are an odd number of negative integers being multiplied, the product will be negative.

EXAMPLES:

$2(8) = 16$ $-8 \cdot 6 = -48$ $16 \div -8 = -2$

$-10 \times -10 = 100$ $2(-5) = -10$ $\dfrac{-28}{-4} = 7$

Find each product/quotient.

1. -8(6)	2. -10 · -10
3. -24 ÷ 8	4. $\dfrac{-21}{7}$
5. -14(-4)	6. -96 ÷ -4
7. $\dfrac{48}{16}$	8. -15 ÷ -15
9. 5(11)(-3)	10. 10(-8)(-2)

Adding/Subtracting Rational Numbers

When Adding/Subtracting ANY fraction:
1. Use GCF to get common denominators.
   - Add/Subtract numerators.
   - Denominators stay the same.
2. Add/subtract the whole numbers if needed.
   When subtracting, the largest absolute value goes on top
3. Reduce to lowest terms.
4. Use the sign of the number with the larger absolute value.

When Adding/Subtracting ANY numbers in decimal form:
1. Line up the place values.
2. Use zeros as place holders.
3. Integer rules apply.

EXAMPLES:

$$\frac{-2}{3}+\frac{5}{9}=\frac{-6}{9}+\frac{5}{9}=\frac{-1}{9} \qquad -2\frac{3}{5}-5\frac{4}{9}=-2\frac{27}{45}+-5\frac{20}{45}=-7\frac{47}{45}=-8\frac{2}{45}$$

$$43.29 + 3.127$$
$$43.290$$
$$+\ 3.127$$
$$46.417$$

Find each sum or difference.

1. $8\frac{5}{12}-2\frac{7}{12}$	2. $\frac{14}{21}+\frac{-2}{7}$
3. $\frac{5}{8}-\frac{2}{3}$	4. $-1\frac{3}{4}+\frac{-3}{16}$
5. $\frac{4}{7}+\frac{-2}{7}$	6. $\frac{14}{25}+\frac{2}{5}$
7. $85.3 - 37.07$	8. $27 + 5.19$
9. $-34.1 + (-17.63)$	10. $-18.21 - (-7.3)$

5

Multiplying/Dividing Rational Numbers

When Multiplying ANY fractions:
1. Rewrite all numbers (whole numbers, mixed numbers, integers) as a fraction.
2. Reduce by simplifying a numerator with a denominator.
3. Multiply numerators. Multiply denominators.
4. Integer rules apply for the sign.

When Dividing ANY fractions:
1. Rewrite all numbers (whole numbers, mixed numbers, integers) as a fraction.
2. Change the division sign to multiplication and take the reciprocal of the fraction immediately **after** the division sign.
2. Reduce by simplifying a numerator with a denominator.
3. *Follow rules for multiplying fractions.*

When Multiplying ANY numbers:
1. Multiply the numbers.
2. Count how many total numbers **after** the decimal.
3. Put the decimal in so that there are the same amount of numbers after the decimal.
4. Integer rules apply for the sign.

When Dividing ANY numbers:
1. Move the decimal out of the divisor and then that many times in the dividend.
2. Use zeros as place holders.
3. Divide and bring decimal straight up in the quotient.
4. Integer rules apply for the sign.

EXAMPLES:

$$\frac{1}{2} \bullet \frac{-2}{7} = \frac{-1}{7}$$

$$-1\frac{1}{9} \div \frac{2}{3} = \frac{-10}{9} \bullet \frac{3}{2} = \frac{-5}{3}$$

$$0.63 \div 0.9 = .9\overline{)\,.63} \quad \begin{array}{r} .7 \\ \underline{-63} \\ 0 \end{array}$$

Find each product or quotient.

1. $-\dfrac{5}{6}\left(-\dfrac{2}{5}\right)$	2. $2\dfrac{5}{6} \bullet 3\dfrac{1}{3}$
3. $-10 \div \dfrac{3}{8}$	4. $\dfrac{-16}{7} \div \left(-\dfrac{12}{35}\right)$
5. $85(0.07)$	6. **−0.104 ÷ (−0.13)**
7. $13.42 \div 67.1$	8. $2.001(0.05)$

Evaluating Expressions

When Evaluating ANY Expression:
1. **Substitute** each variable with its assigned value.
2. **Simplify** the expression using order of operations.

★ Be careful! When replacing a variable with a **negative value**, put **parentheses** around the value in the expression.

EXAMPLES:
Evaluate the expression 4xy, if x = -5 and y = -6.
4**xy** → 4(**-5**)(**-6**) → 180

Evaluate each expression.

1. Evaluate 3x when x = -6.	2. Evaluate -8x when x = -5.
3. Evaluate 0 ÷ y when y = -12.	4. Evaluate $\dfrac{x}{4}$ when x = -8.
5. Evaluate $\dfrac{-144}{y}$ when y = -12.	6. Evaluate -2(x + y) when x= -1 and y = 4.
7. Evaluate 3(y + x) when x = 6 and y = 1.	8. Evaluate (a + c) – b when a = 0.4, b = 3.5, and c = 15.61.
9. Evaluate c – d – a when a = 0.4, c =15.61, and d = 0.03.	10. Evaluate x + y when x = $\dfrac{3}{8}$ and y = $\dfrac{3}{4}$.

Translating Into Expressions

To Translate Sentences into Algebraic Expressions:
1. Identify the variable by telling what phrase the variable stands for in the sentence. (This could be the phrase "a number" or it could be the unknown information in the sentence).
2. Translate the sentence into related numbers, operations, and variable(s). Usually, the order of the translation will mimic the order of the sentence. (It is helpful to know what words and phrases represent the four main operations, addition, subtraction, multiplication, and division.)

EXAMPLES:

"**Seven** **less than** **some number**"   "**Thirteen** dollars **plus** the **cost of food**"

Let n = some number → **n – 7**   Let f = cost of food → **13 + f**

Identify the variable. Then, translate into an expression.

1. A number more than seven	2. The product of some number and six
3. Some number decreased by twelve	4. The quotient of ninety and a number
5. Eight less than some number	6. Twice the number
7. Half of some number	8. Seventeen more than a number
9. Brian is triple his nephew's age	10. Maria ran 4½ miles more than Amy

<u>Two-Step Equations</u>

<u>**To Solve Two–Step Equations:**</u>
1. **Isolate** the **variable** by using inverse operations
2. **Check** your solution by replacing the variable with the integer.

Examples:

$2x - 10 = 12$	$7x + 9 = -12$	$-3x + 4 = 19$	$\dfrac{x}{3} + 7 = 10$
$\underline{+10 \ +10}$	$\underline{-9 \ \ -9}$	$\underline{-4 \ \ \ \ -4}$	$\underline{-7 \ \ \ -7}$
$2x = 22$	$7x = -21$	$-3x = 15$	$\dfrac{x}{3} = 3$
$\div 2 \ \div 2$	$\div 7 \ \ \div 7$	$\div -3 \ \div -3$	$\bullet \, 3 \ \bullet 3$
$x = 11$	$x = -3$	$x = -5$	$x = 9$

Solve and check. Show all of your work.

1. 6m + 1 = -23	2. 5 + 4d = 37
3. 3 -7y = -25	4. 6 − 5b = -14
5. $\dfrac{11}{12}e + 25 = 47$	6. $15 - \dfrac{1}{7}w = -3$
7. 8(x + 3) = 72	8. -7(z − 6) = -70
9. -0.6(r + 0.2) = 1.8	10. $\dfrac{-2}{3}(w - \dfrac{4}{9}) = -\dfrac{4}{5}$

9

Writing Equations

To Write an Equation:
1. **Identify** a variable. Ex: Let x = the number
2. Look for **key words**: Ex decrease (-), increase (+), is (=)

Example:

A **number** increased by 6 is 24.   Five less than a **number** times three is -25
Let x = the number   Let x = the number

$$x + 6 = 24$$ $$3x - 5 = -25$$

Identify the variable. Translate into an equation.

1. Twice a number decreased by 7 is 19.	2. Six times a number increased by 8 Is -84.
3. Four minus one-fifth a number is -6.	4. Eight plus two-thirds a number is 12.
5. A company charges $2 for each balloon in an arrangement and a $3 delivery fee. You have $9 to spend. Write an equation for this situation.	6. It costs $7.50 to enter a petting zoo. Each cup of food to feed the animals is $2.50. If you have $12.50, how many cups can you buy?
7. Jamal and two cousins received the same amount of money to go to a movie. Each boy spent $15. Afterward, the boys had $30 altogether. How much money did each boy receive?	8. Mr. Singh had three sheets of stickers. He gave 20 stickers from each sheet to his students and has 12 total stickers left. How many stickers were originally on each sheet?

10

Solving and Graphing Inequalities

To solve and graph inequalities:
1. **Isolate** the variable by using inverse operations.
2. **Graph** the solution on the number line.
   - A closed circle is used when the point is included. ($\leq$, $\geq$)
   - An open circle is used when the point is not included. ($<$, $>$)

Example:

$$X + 9 < 16$$
$$\underline{-9 \quad -9}$$
$$x < 7$$

Since x is less than 7, shade all values that are less than 7. Use an open circle.

Solve and graph each inequality:
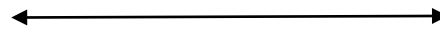
1. $x - 4 < 10$	2. $x + 9 > 12$
3. $4x \leq 2.4$	4. $0.7x \geq 56$
5. $\dfrac{x}{4} \leq 8$	6. $\dfrac{x}{9} \geq 1.5$
7. $x - 7.3 > 24$	8. $x + 5\dfrac{2}{3} < 31$
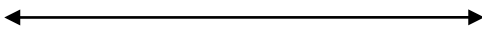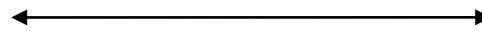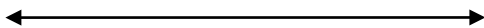
11

Geometry

Area of square: s^2 Area of trapezoid: $\dfrac{b_1 + b_2}{2} \bullet h$ perimeter: add all sides

Area of rectangle: $b \bullet h$ Area of circle: $\pi \bullet r^2$ circumference: $2 \bullet \pi \bullet r$ or $\pi \bullet d$

Area of parallelogram: $b \bullet h$ Area of triangle: $\dfrac{b \bullet h}{2}$ Volume of prism: Area of the base $\bullet$ h or lwh

Solve. Show all work!

1. Find the circumference of a circle whose radius is $2\frac{3}{4}$ feet. Round to the nearest tenth.	2. Find the perimeter of the composite shape. 8 yd 6 yd 9 yd 6 yd
3. Find the area of a triangle whose base is 7.5 cm and whose height is 11 cm. Round to the nearest tenth.	4. Find the area of a square whose side is $5\frac{2}{3}$ m.
5. Find the area of the square given a radius of 5 cm.	6. Find the volume of a cube whose side is 14 meters.
7. Find the volume of a rectangular prism. 6 m 4.5 m 8 m	8. Find the volume of the square pyramid. 10 mm 6 mm 6 mm
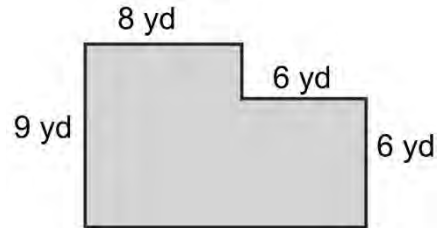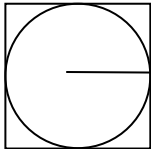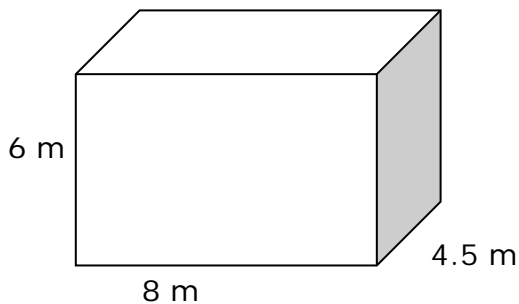
12
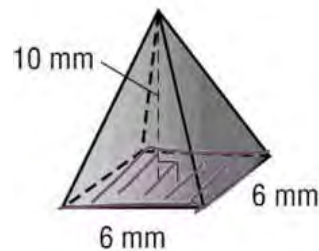
Proportions

Setting up:
1. Create two equal ratios.
2. **Label** each numerator and denominator so that they **match**.

Solving:
1. **Cross multiply** by multiplying the two diagonals and set them equal to one another.
2. **Solve.**

$$\frac{3}{5} = \frac{x}{10} \qquad 3 \bullet 10 = 5 \bullet x$$
$$30 = 5x$$
$$6 = x$$

Solve. Show All Work!

1. $\dfrac{x}{2\frac{1}{3}} = \dfrac{8}{3}$	2. $\dfrac{6}{2} = \dfrac{4}{x}$
3. $\dfrac{5.1}{1.7} = \dfrac{7.5}{x}$	4. $\dfrac{6.4}{0.8} = \dfrac{8.1}{x}$
5. Given the scale 2 cm = 3 m, how long is the scale drawing of a basketball rim that is 16 m. tall?	6. To tie dye a shirt orange, you need 2 parts red to 5 parts yellow. How much yellow do you need if you have 13 parts red?
7. Find the unit price of a case (12 cans) of soda for $2.25.	8. A rectangle is 11.4 in tall and 5.4 in wide. If it is reduced to a height of 5.7 in then how wide will it be?

Constant of Proportionality

To Find _k_:
1. Find the **unit rate**, _y/x_.

To Determine if Proportional or Not:
1. Check that every _y/x_ is the same or "constant."

Cans of Paint (x)	5	10	6	9	2
Bird Houses Painted (y)	15	30	18	27	6

For every can of paint you could paint 3 bird houses.

15/5 = 3; k = 3

Use the tables below to find the constant of proportionality, _k_, or to determine whether the relationship is proportional or not.
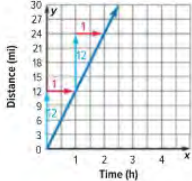
1. Find the constant of proportionality.

x(hours)	y(cookies)
1	4
2	8
3	12
4	16

2. Find the constant of proportionality.

x(weeks)	y(years)
2	4
3	6
5	10
9	18

3. Find the constant of proportionality.

x(hours)	y(miles)
1	5
2	10
3	15
4	20

4. Find the constant of proportionality.

x(dollars in sales)	y(dollars in commissions)
$30	$3
$50	$5
$80	$8
$90	$9

5. Do _x_ and _y_ have a proportional relationship? Explain your answer.

x(minutes)	y(gallons)
2	30
3	45
5	60
6	90

6. Do _x_ and _y_ have a proportional relationship? Explain your answer.

x(months)	y(dollars)
2	$48
3	$72
4	$88
5	$120

14

Graphing Relationships

To Graph and Determine Proportionality:
1. Plot each ordered pair, *(x, y)*, by moving right *x* units and up *y* units from the origin.
2. Check that the points are in a **line** and would include the **origin**, (0, 0).
3. If so, the relationship is proportional; if not, then it is not proportional.

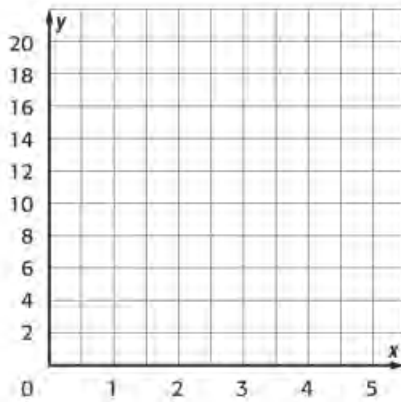| Hours, x	y = 12x	Miles, y
0	y = 12(0)	0
1	y = 12(1)	12
2	y = 12(2)	24

Proportional; points align; (0, 0)

Determine whether the relationship between the two quantities shown in each table is proportional by graphing on the plane.
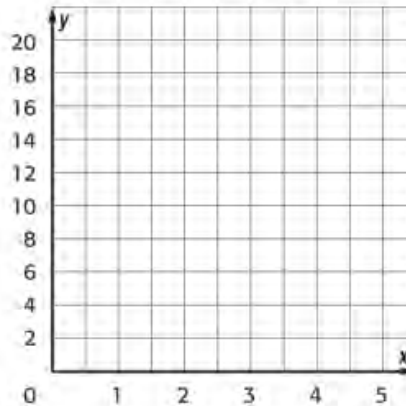
1.

x(number of tennis balls sold)	3	4	5	6
y(total cost)	6	8	10	12

2.

x(gallons)	1	2	3	4
y(quarts)	4	8	12	16

3.

x(number of video games rented)	1	2	3	4
y(cost)	3	5	7	9
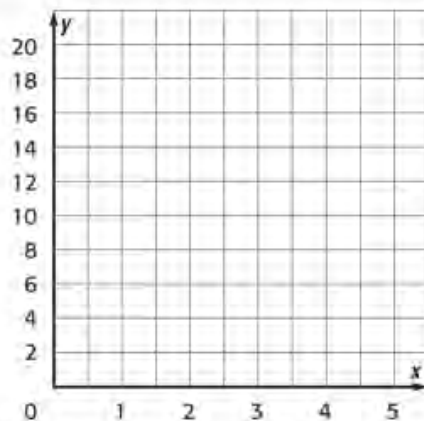
4.

x(number of minutes)	2	4	6	8
y(number of calories)	4	8	12	16

15
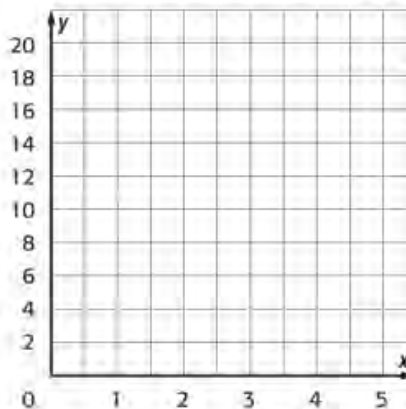
Percents

1. Set up a **proportion** $\dfrac{\%}{100} = \dfrac{part(is)}{whole(of)}$

2. Labels must match vertically or horizontally.

Solve:

1. Solve by cross multiplying.

Sydney completed 3 out of her 5 skill sheets, what percent did she complete?

$$\frac{3\,completed}{5\,total} = \frac{\%\,completed}{100\,total}$$

Solve. Show All Work!

1. Express 30% as a fraction in simplest form.	2. Express $18\dfrac{4}{5}\%$ as a decimal.
3. If 125% of a number is 20, what is the number?	4. $33\dfrac{1}{3}\%$ of 150 is what number?
5. What percent of 52 is 6.24?	6. A bike that is originally $240 is on sale for 20% off. What is the sales price?
7. In your class, there are 8 girls and 14 boys. What percent of your class is girls?	8. 272 out of 320 students in your school were surveyed about their favorite soda. What percent of the school population was surveyed?
9. Diane's allowance is $20 per week. She saves 30% of her allowance. How much does she save each week?	10. Your Dad bought a concert ticket for $126. He said that you have to pay 75% of the cost of the ticket. How much did you have to give your Dad?

16

Time Travel through Space History

Space Exploration STEM Activities
1950
Sputnik and Satellites
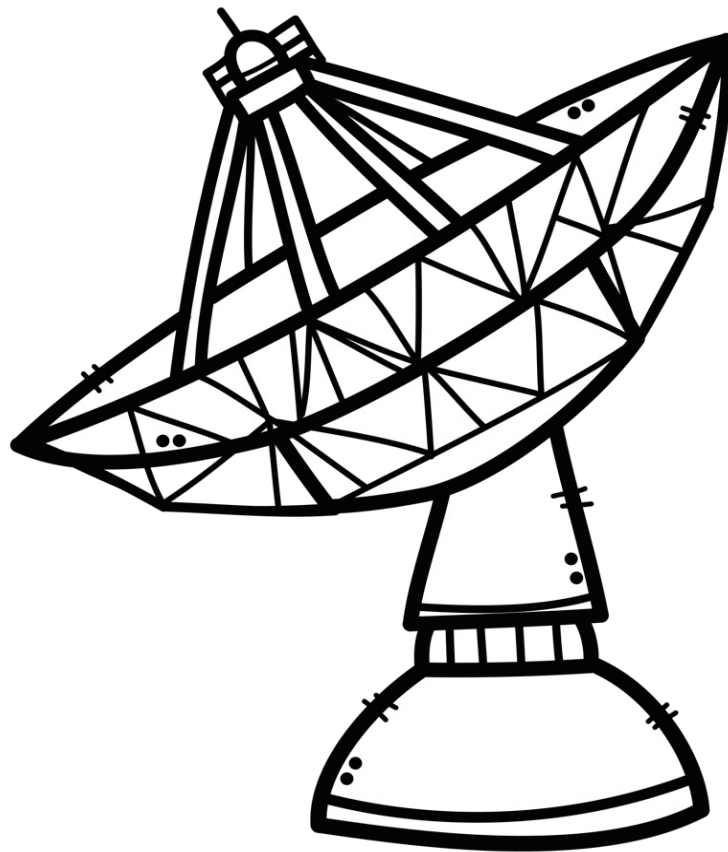
1950 Satellites and Sputnik

What is a satellite?

A satellite is any smaller object that moves around a larger object. So a moon orbiting around a planet is really a satellite. However, most of the time when we talk about satellites we are talking about the man-made objects that we put into space.

What do satellites do?

Because satellites orbit the Earth they are able to view large areas of the Earth at one time. This is particularly helpful for satellites that are put into space to help predict the weather. Some satellites are put into space to help us learn about the solar system and the universe beyond and they face away from the Earth. Other satellites are launched to enable communication around the world. Many of the satellites help ships, planes and even people on Earth navigate their way with a system called GPS. Many countries launch satellites to help their militaries locate armies and their supplies.

What does a satellite look like?

Satellites come in all shapes and sizes. The parts of a satellite depend upon what its specific purpose it. For example, if the satellite's purpose is to learn about the solar system it will have a camera. However, all satellites need to have some sort of power source and also a way to communicate with earth. Many satellites employ solar panels to use the sun's energy as a power source.

What was Sputnik?

The first satellite put into space was the Sputnik 1 launched by the Soviet Union in 1957. The United States quickly followed a year later with Explorer I in 1958. Since then over 2,500 satellites have been launched into space by the various countries of the world.

Get Caught Engineering®

Your Mission

Satellites are put into space for many different reasons such as part of communication systems, help planes, ships and people with navigation and to assist in military operations. Many satellites are put into space for help monitor weather.

You have been asked to build a prototype of a weather satellite for The National Oceanic and Atmospheric Administration -NOAA. This satellite will monitor weather conditions in the upper atmosphere and also take pictures of weather events such as hurricanes and tornadoes. It must meet the following requirements:

- Have a body to support the other needed parts and scientific weather instruments. This body can be whatever shape you desire.
- Carry the following instruments:
  - Power source – usually solar panels
  - Communication antenna
  - Navigation equipment so that it knows where in the universe it is
  - Camera
- Be equipped with at least one other scientific tool of your choosing. You must be specific on your drawing and also state its purpose in the problem-solving section.
- Have one moveable part, such as an antenna or camera that can change direction
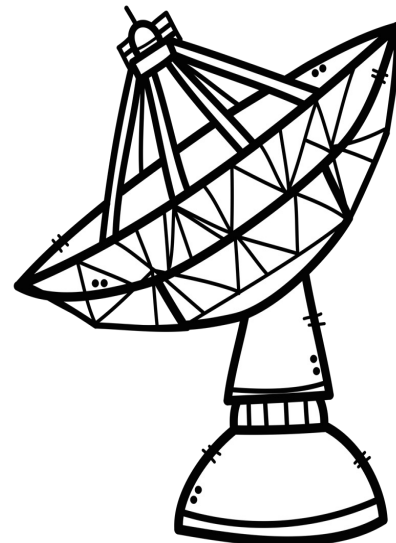
Problem Solving

What other scientific tool will your satellite carry? What is its purpose?

_____
_____
_____
_____
_____

What will the body of your satellite look like?

_____
_____
_____
_____
_____
_____

How will you connect the instruments to the body of the satellite?

_____
_____
_____
_____
_____

Which part will be the part that moves? How will you get it to move?

_____
_____
_____
_____
_____

Which of the materials will work the best for the different parts of your satellite?

_____
_____
_____
_____
_____