Millennium Collegiate Academy 6-12

8th GRADE SUMMER PACKET

ELA, SOCIAL STUDIES, SCIENCE, MATH-GEOMETRY

Every student must read their assigned TIP novel, as well as one of the novels from the left column.

Novel- Choose one	**TIP Novels by Grade Level**
Incoming 6th Grade *Frenzy* by Robert Lettrick *The Honest Truth* by Dan Gemeinhart *The Luck Uglies* by Paul Durham *The Sinister Sweetness of Splendid Academy* by Nikki Loftin **Incoming 7th Grade** *All Fall Down* by Ally Carter *Bot Wars* by J.V. Kade *The Crossover* by Kwame Alexander *The Summer I Saved the World in 65 Days* by Michele Weber Hurwitz **Incoming 8th Grade** *Insignia* by S.J. Kincaid *Echo* by Pam Munoz Ryan *The Neptume Project* by Polly Holyoke *The Worst Class Trip Ever* by Dave Barry	**6th grade** *Blood on the River* **7th grade** *To Kill a Mockingbird* **8th grade** *Anthem*

DIALECTICAL JOURNAL

REQUIREMENTS:

- YOU MUST COMPLETE **NINE** ENTRIES FOR EACH SUMMER READING NOVEL (THREE FROM THE BEGINNING OF THE BOOK, THREE FROM THE MIDDLE, AND THREE FROM THE END).
- YOU MUST CHOOSE EACH OF THE RESPONSE CODES LISTED BELOW AT LEAST ONCE FOR EACH NOVEL.
- EACH ENTRY MUST BE AT LEAST **TWO** SENTENCES LONG.

PROCEDURE:

- As you read, choose passages that stand out to you and record them in the left-hand column of a T-chart (*ALWAYS include page numbers).*
- In the right column, write your response to the text (ideas/insights, questions, reflections, and comments on each passage)
- Label your responses using the following **codes**:
  - **(Q) Question** – ask about something in the passage that is unclear
  - **(C) Connect** – make a connection to your life, the world, or another text
  - **(P) Predict** – anticipate what will occur based on what's in the passage
  - **(CL) Clarify** – answer earlier questions or confirm/disaffirm a prediction
  - **(R) Reflect** – think deeply about what the passage means in a broad sense – not just to the characters in the story. What conclusions can you draw about the world, about human nature, or just the way things work?
  - **(E) Evaluate** - make a judgment about the character(s), their actions, or what the author is trying to say

Sample Dialectical Journal entry: Hatchet by Gary Paulsen

Passages from the text	Pg#s	Comments & Questions
"'Thanks. It's really nice.' But the words sounded hollow, even to Brian."	Pg 8	"Why does Brian feel that way about getting a hatchet from his Mom? If the words sound hollow to Brian, he must not mean it. Why is he mad at his Mom? **Question**
"No roads, no trails, no clearings. Just the lakes, and it came to him that he would have to use a lake for landing. If he went down into the trees he was certain to die."	Pg 23	I can't imagine keeping my cool in a situation like this. I'd be on my cell phone, freaking out and he's trying to land the plane! I guess it's important to keep your cool in a crisis. **Connect**
"Now, with the thought of the burger, the emptiness roared at him. He could not believe the hunger, had never felt this way. The lake water had filled his stomach, but left it hungry, and not it demanded food, screamed for food."	Pg 48	It's weird how Brian's stomach is like a character now, driving his behavior. I've been hungry before, but never like that. Is he going to start eating things that are poison because he is so hungry? **Connect**

CHOOSING PASSAGES FROM THE TEXT:
Look for quotes that seem significant, powerful, thought provoking or puzzling. For example, you might record:

- Effective and/or creative use of stylistic or literary devices
- Passages that remind you of your own life or something you've seen before
- Structural shifts or turns in the plot
- A passage that makes you realize something you hadn't seen before
- Examples of patterns: recurring images, ideas, colors, symbols or motifs.
- Passages with confusing language or unfamiliar vocabulary
- Events you find surprising or confusing
- Passages that illustrate a particular character or setting

RESPONDING TO THE TEXT:
You can *respond* to the text in a variety of ways. The most important thing to remember is that your observations should be ***specific and detailed.*** You can write as much as you want for each entry.

Basic Responses

- Raise questions about the beliefs and values implied in the text
- Give your personal reactions to the passage
- Discuss the words, ideas, or actions of the author or character(s)
- Tell what it reminds you of from your own experiences
- Write about what it makes you think or feel
- Agree or disagree with a character or the author

Sample Sentence Starters:
I really don't understand this because…
I really dislike/like this idea because…
I think the author is trying to say that…
This passage reminds me of a time in my life when…
If I were (name of character) at this point I would…
This part doesn't make sense because…
This character reminds me of (name of person) because…

Higher Level Responses

- Analyze the text for use of literary devices (tone, structure, style, imagery)
- Make connections between different characters or events in the text
- Make connections to a different text (or film, song, etc…)
- Discuss the words, ideas, or actions of the author or character(s)
- Consider an event or description from the perspective of a different character
- Analyze a passage and its relationship to the story as a whole

Name _____ Class _____ Date _____

Basic Map Skills

Facts and Figures

A. Match each term in column A with the correct definition in column B.

A	*B*
____ 1. legend	A. one half of the globe
____ 2. directional indicator	B. imaginary lines that measure how far north or south of the equator you are
____ 3. Tropic of Cancer	C. imaginary line running from the North Pole to the South Pole, which is used to determine longitude
____ 4. globe	D. compares distances on a map to distances on the surface of the earth
____ 5. latitude	E. part of a map that tells what the symbols on a map stand for
____ 6. scale	F. a diagram of the earth's surface drawn on a flat sheet of paper
____ 7. map	G. imaginary lines that circle the earth in a north-south direction
____ 8. compass rose	H. usually an arrow pointing north on a map
____ 9. hemisphere	I. a scale model of the earth
____ 10. Tropic of Capricorn	J. directional indicator showing east, west, north, and south
____ 11. Prime Meridian	K. latitude line that circles the globe at 23½° N
____ 12. longitude	L. latitude line that circles the globe at 23½° S

B. Locate the following places on the illustration. Then write the correct number on the line.

____ 13. Africa

____ 14. Asia

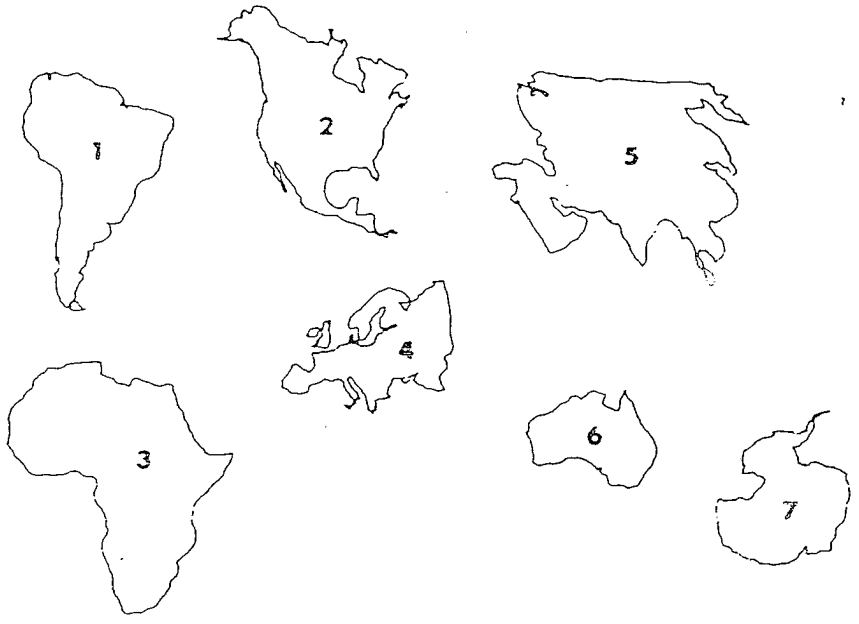
____ 15. North America

____ 16. Antarctica

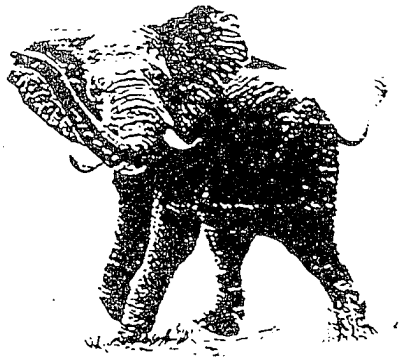
____ 17. Europe

____ 18. Australia

____ 19. South America



Use the maps and additional references to complete the following.



1. Label and color the continents.

Africa	green
Asia	orange
Europe	yellow
Australia	red
North America	brown
South America	purple
Antarctica	gray

2. Label these parallels and meridians: Equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle, and Prime Meridian.
3. Label the North and South Poles.
4. Label the oceans: *Pacific, Atlantic, Indian, and Arctic.*
5. Label the compass rose on the map with these directions: north, south, east, west, northeast, southeast, northwest, and southwest.

Use the eight major directions or names of seas and continents to complete the following.

6. Europe is _____ of North America.
7. To travel from South America to Australia you would go _____ and cross the _____ Ocean.
8. Europe lies _____ of South America across the _____ Ocean.
9. Antarctica is _____ of Europe, Asia, and North America.
10. Africa lies _____ of Antarctica.
11. The continent of _____ is northeast of Africa.
12. The continent of _____ is east of Asia across the _____ Ocean.
13. The _____ Ocean separates Africa and Australia.
14. The continents of _____ and Asia are really parts of the same land mass.
15. North America is in the _____ and western hemispheres.
16. _____ and _____ are the two continents that are entirely in the Southern Hemisphere.
17. Asia is mostly in the northern and _____ hemispheres.
18. The Tropic of Cancer is in the _____ hemisphere.
19. The Equator separates the _____ and _____ hemispheres.
20. The _____ Meridian separates the eastern and _____ hemispheres.

GEOGRAPHICALLY SPEAKING

Would you rather eat a *desert* or a *dessert*? Could you *ford* a *fjord*? Where is there a *cape* that you cannot wear? Is every *strait straight*? Can you tell a *mesa* from a *butte* from a *plateau*? The italicized words are all geographic features. You cannot answer the questions about them unless you know what they mean. Find out how much you really know about geographical features of the world.

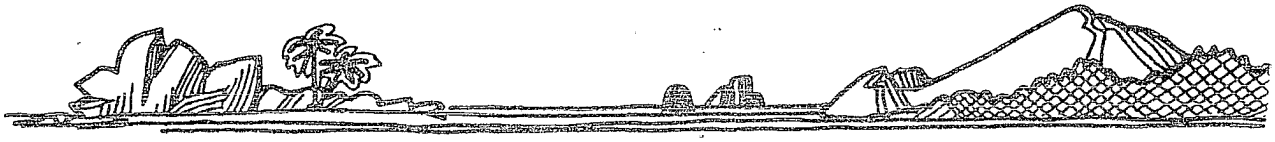
I. Look at each numbered feature on the map on the next page (page 111). Use a colored pen to write one of the labels in the box below on the map.

* archipelago	butte	* sea	hill	plain
* lake	* peak	dune	* waterfall	plateau
* mountain range	cliff	* gulf	island	coral reef
atoll	* desert	fjord	lagoon	sound
* bay	canyon	* strait	mesa	prairie
jungle	* river	foothills	mountain	iceberg
* ocean	tundra	* isthmus	channel	swamp
beach	* glacier	harbor or port	mouth	valley
* cape	delta	* volcano	peninsula	

II. Next, become more familiar with some of these features while you practice finding them in th world. Use your textbook, maps, a globe, an encyclopedia, an atlas, or other references to find examples of the 16 features that are starred above. Here's how to do it:

1. Divide a piece a paper into sixteen sections, or little boxes.
2. Write one of the features at the top of each section as a bold label or title.
3. Explain or define the feature in your own words.
4. Find an example of that feature somewhere in the world and tell where it can be found. Write this information in the box.
5. Tell the world region where this example can be found. Here's the challenge: You must find 2 examples in each of the 8 major world regions (NO MORE THAN 2 from each): Anglo America; Latin America; Western Europe; Eastern Europe and Russia; Middle East and North Africa; Sub-Saharan Africa; Southern and Eastern Asia; and Pacific Region.

Use with page 111.



Traveling Back in Time to Join

THE "MAN"-HUNT AT MOOSE GULCH

The town of Moose Gulch, Alaska, was founded when prospectors had great luck finding gold in the nearby hills. Moose Gulch prospered until disaster hit. The feared bank robber, Bessie James, spoiled the good fortune by robbing the First Nugget Bank, then disappearing with all the gold.

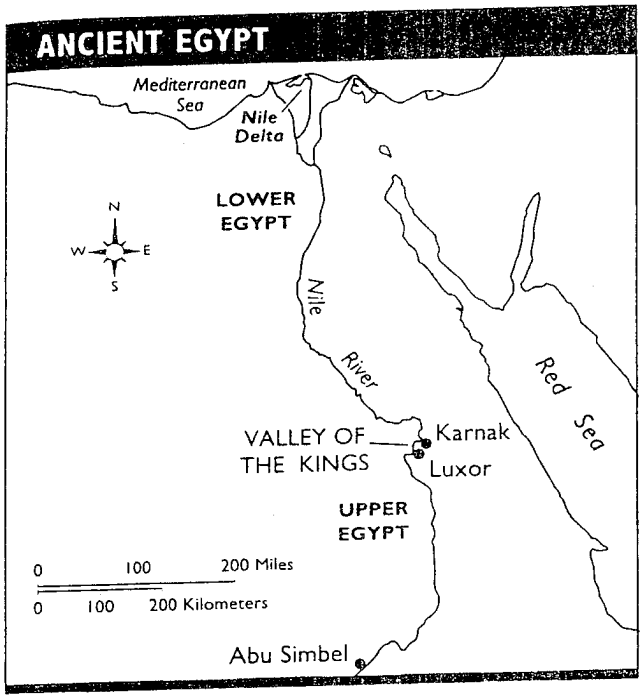
1. Start your search for the robber by getting all the details at the bank on _____. The bank manager sends you _____ (direction?) to the marshall's office.
2. The marshall suggests you get the unofficial details from the local postmistress, who knows everything in town. The Post Office is one building _____ (direction?) of the marshall's office.
3. The postmistress sends you on your way with some ideas. You get coffee at the General Store and search the place thoroughly. Then you continue two buildings west to the _____.
4. Your next search is the Gold Dust Music Hall on _____. There is no sign of Bessie. So you head two buildings north of the hall to _____.
5. Goldie sends you to the Grub & Steak Café, on _____. After a good steak, and no sign of Bessie, you search the school. What direction is the school from the café? _____
6. You hear that the old Ice House is abandoned, so you decide to search there. What direction is the Ice House from the school? _____
7. Next, you visit the establishment at #15 Wharf Road. What is this? _____
8. Folks say that Miss Stitch has a keen eye. To get there from #15 Wharf Road, you'll head _____ (direction) on _____ and then _____ (direction) on _____ and then _____ (direction) on _____.
9. Next you search the home of _____on the northwest corner of Wharf and Lost Mine Roads, and _____, the southern-most place on the river. No luck!
10. The reporter at the Moose Gulch Gazette has a lead. On which street is his office?_____ He says you should head for the one place in town you have not yet been, and search the place thoroughly.
11. Sure enough, in this place, belonging to _____, you find old Bessie, tucked away in bed, wrapped in casts, cleverly disguised as an ailing patient. Good work!

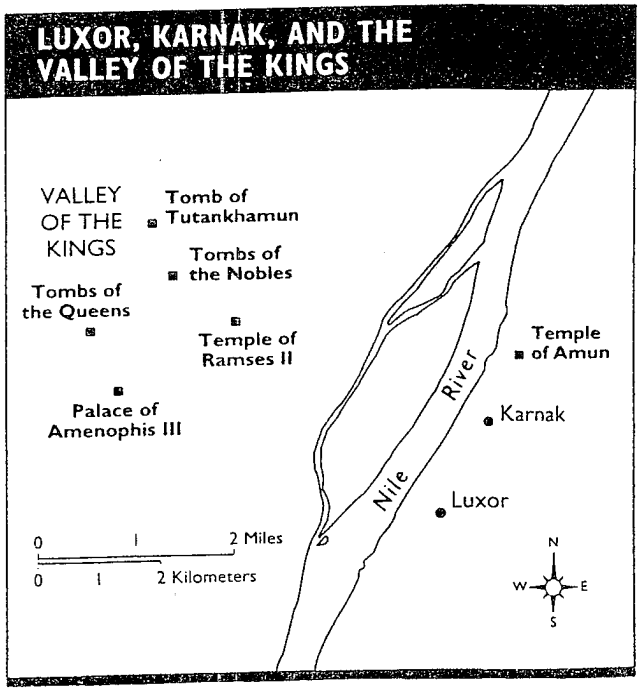
Name _____

Name: _____

Using Maps at Different Scales

A map scale is a unit of measure, such as an inch, used to represent a distance on Earth. Use the maps below to answer the questions. If you need help, refer to pages 92–93 in your textbook.





1. What does one inch represent on the map of ancient Egypt? _____

   On the map of the Valley of the Kings? _____

2. Compare the two maps. Which map is a small-scale map?

   _____

3. Which map would you use to trace the route of the Nile River?

   _____

4. Which map would you use to plan a walking tour of temples and royal tombs?

   _____

5. What is the distance from Abu Simbel to Luxor? _____

   Which map did you use to find the distance? _____

6. Is the Tomb of Tutankhamun east or west of the Nile River? _____
   Which map did you use to find the answer?

   _____

Name:

Previous School:

Date:

Previous Math Teacher:

Rising 8th Grade Student
STAR Summer Review Assignment

Welcome to 8th Grade Math!!! Your journey to a successful year in math starts this summer!! This packet is comprised of the important concepts necessary for success in math this year. Completion of the packet is mandatory for all students and will be counted as the first grade for the year. As you complete this packet, show all steps used to arrive at your final answer. The resource topics can be found in Khan Academy. It will be expected that you know how to work all the material found in this packet. See you in August!!

Please be sure to not use the calculator when you see this symbol.

Instructions

- ✓ Please work all problems on loose-leaf paper with a pencil. Do not use ink.
- ✓ Write neatly.
- ✓ Follow all directions for each set of problems. There should be no decimal answers unless the problem has decimals in it.
- ✓ **This work is independent work. However, you may enlist the help of a tutor or parent on *concepts*, but not specific problems in this packet. Having someone help you with the specific problems in this packet will be considered a violation.**
- ✓ You will submit this packet to your math teacher on the first day of class.

Websites for assistance and additional practice

www.khanacademy.org

www.millenniumstars.org

Due: Monday, August 21, 2017

Rising Geometry Students Summer Skills Work

Evaluate the following when x = 4, y = -2, and z = 5. Show all work.

Evaluate means to substitute the value in for each variable and simplify the expression.

1) $3x - y$

2) $xy + z$

3) $4x - 3z$

4) xyz

5) $x - 2y + 3z$

6) $x\,(y - 2z)$

7) $x^2 - y^2$

8) $\frac{1}{2}x + y^2$

9) $\frac{x-y}{-3}$

10) $|xy|$

11) $|z+x|$

12) $|2z|+|3y|$

Place the number to the correct answer for questions 1 through 12 in the box below.

14	12	-3	6	1	-2	-40	8	23	9	-48	16

Simplify the following by combining like terms. Like terms have the same variable and exponent. These terms can be combined with addition and subtraction without changing the exponent of each term.

1) $5x - 3x$

2) $4y - 7y$

3) $y - 6y^2 + y^2 - 3y$

4) $5x - 3y - x + 7$

5) $7y - 12 - 3y$

6) $2x - 4 + 3x + 8$

7) $5y + 3x - 2z - 3y + 6x + 8$

8) $4(x - 2) - 3(x + 7)$

9) $4 - 3(x - 5) + 2x$

10) $x^2 + 3x + 2x^2 - 8 + 4x$

11) $7x^2y + 3xy + 2x^2y - 8xy^2 + 4xy$

12) $x^2y^2 + 3y + 5x^2y - 4x^2y^2 + 4y$

13) $5(x - 2y + 3) - 2(2y + 3x + 7)$

14) $2y^2 + 3y - 9y - 7y^2 + 4y$

Place the number to the correct answer for questions 1 through 14 in the box below.

$9x + 2y - 2z + 8$	$5x + 4$	$-x + 19$	$2x$	$-5y^2 - 2y$	$x - 29$	$3x^2 + 7x - 8$
$9x^2y - 8xy^2 + 7xy$	$-3y$	$4y - 12$	$-5y^2 - 2y$	$-3x^2y^2 + 5x^2y + 7y$	$-x - 14y + 1$	$4x - 3y + 7$

Use order of operations (PEMDAS) to simplify the following.

1) $8 + 6 - 3$

2) $15 - (7 - 2) - 3$

3) $5(4) - 10$

4) $24 - 21 \div 3$

5) $18 - 12 \div 4$

6) $12 - (4 + 7)$

7) $7(3 + 4)$

8) $12 \div 3 \cdot 4$

9) $(11 + 4) \div 5$

10) $(12 \cdot 4) \div (2 \cdot 2)$

11) $30 \div 6 - 1$

12) $42 \div (5 + 2) \cdot 3$

13) $4 + 3(7 - 2)$

14) $5(6 - 8)$

15) $15 - 2(8 + 3)$

16) $2 - 8 \div 4$

17) $4 - 8 + 6$

18) $10 - 3(4)$

Place the number to the correct answer for questions 1 through 18 in the box below.

11	16	-10	7	3	-7	10	12	17	-2	15	1	18	2	4	0	49	19

Simplify the following:

1) $\frac{1}{2} + \frac{3}{5}$

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

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

4) $\frac{2}{7} + \frac{4}{9}$

5) $2\frac{2}{5} + 5.256$

6) $\frac{3}{5} + \frac{2}{3} - \frac{3}{10}$

7) $\frac{3}{5} \bullet \frac{2}{9}$

8) $1\frac{1}{5} \bullet \frac{5}{6}$

9) $2\frac{3}{4} \bullet 1\frac{3}{5}$

10) $\frac{3}{4} \div \frac{3}{5}$

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

12) $3\frac{1}{7} \div 1\frac{1}{4}$

Place the number to the correct answer for questions 1 through 12 in the box below.

$\frac{46}{63}$	$\frac{14}{15}$	$\frac{-4}{5}$	$\frac{11}{10}$	$\frac{2}{15}$	1	$\frac{957}{125}$	$\frac{88}{35}$	$\frac{5}{4}$	$\frac{29}{30}$	$\frac{1}{3}$	$\frac{22}{5}$

A number is expressed in scientific notation if it is written as a number between 1 and 10 multiplied by a power of 10. For example, 3.2 x 10 is the number 32 written in scientific notation.

Write each number in scientific notation:

1) 6,780,000

2) .0678

3) 678

4) 67,800

5) .678

6) .000678

7) 678,000

8) 678,000,000

9) .00678

10) .00000678

11) 678×10^{14}

12) 67.8×10^{8}

13) $.678 \times 10^{-10}$

14) $.0678 \times 10^{9}$

15) 678×10^{-12}

16) 6,780

Place the number to the correct answer for questions 1 through 16 in the box below.

$6.78\text{x}10^{16}$	$6.78\text{x}10^{2}$	$6.78\text{x}10^{-1}$	$6.78\text{x}10^{-4}$	$6.78\text{x}10^{5}$	$6.78\text{x}10^{6}$	$6.78\text{x}10^{7}$	$6.78\text{x}10^{8}$
$6.78\text{x}10^{9}$	$6.78\text{x}10^{3}$	$6.78\text{x}10^{-2}$	$6.78\text{x}10^{-3}$	$6.78\text{x}10^{4}$	$6.78\text{x}10^{-6}$	$6.78\text{x}10^{-10}$	$6.78\text{x}10^{-11}$

Ex: $\frac{4}{5}=\frac{x}{15}$ **Cross Multiply** $5 \bullet x = 4 \bullet 15$

Then solve $x = 12$

Solve the following proportions:

1) $\frac{3}{4} = \frac{n}{16}$

2) $\frac{2}{3} = \frac{24}{n}$

3) $\frac{n}{2} = \frac{56}{112}$

4) $\frac{14}{n} = \frac{28}{4}$

5) $\frac{5}{6} = \frac{n}{18}$

6) $\frac{2}{n} = \frac{14}{35}$

7) $\frac{n}{4} = \frac{9}{n}$

8) $\frac{n+2}{4} = \frac{6}{5}$

9) $\frac{n+2}{3} = \frac{2}{4}$

10) $\frac{4}{n+3} = \frac{5}{n-1}$

11) $\frac{4}{n} = \frac{n-1}{3}$

12) $\frac{4}{n} = \frac{n}{25}$

Place the number to the correct answer for questions 1 through 12 in the box below.

±10	36	12	±6	5	2.8	15	-0.5	2	-19	1	4, -3

Solve for x. Show all work.

1) $.5x = 3.5$

2) $\frac{x}{2} = \frac{-7}{4}$

3) $\frac{2}{3}x + 309 = 711$

4) $3x - 4 = -22$

5) $5 - x = 12$

6) $\frac{x}{3} + 5 = 7$

7) $5(x - 3) = -20$

8) $-3(4 - x) = 12$

9) $\frac{2}{3}(x - 9) = 14$

10) $4(x - 3) = 3(x + 7)$

11) $5(2x + 3) = 7(x - 3)$

12) $2(x - 3) - 4 = 10$

13) $5(x - 2) - 3(x + 4) = -20$

14) $5x - 13 = 2x + 14$

15) $12 - 7x = -3x - 8$

Place the number to the correct answer for questions 1 through 15 in the box below.

30	10	-1	8	-3.5	603	33	5	-7	9	6	1	7	-6	-12

Solve the following multi-step equations:

1) $2x + 4 = 8x - 26$

2) $3x - 9 = 2x + 8$

3) $x - 12 = 5x$

4) $7x - 9 = 4x$

5) $3x - 8 = x + 12$

6) $4x + 8 = 2x + 7$

7) $4(x - 3) = -12$

8) $5(2x + 7) = -15$

9) $4(x + 6) = 2(x - 4)$

10) $3(2x - 7) = 6 + 2(x - 3)$

11) $\frac{2x-1}{3} = 5$

12) $\frac{3x+4}{2} = 5$

Place the number to the correct answer for questions 1 through 12 in the box below.

-0.5	10	3	0	-5	-16	5	17	-3	2	8	5.25

Solve the following:

1) $x + 4 \leq -8$

2) $x - 12 > 7$

3) $4x \geq -12$

4) $5 + x < 12$

5) $6 - x > 7$

6) $15 < -3x$

7) $\frac{x}{5} \leq -3$

8) $\frac{x}{-5} > -2$

9) $-\frac{x}{7} > 2$

10) $8 > x - 4$

11) $7 < 4 + x$

12) $-5x \geq -20$

13) $2x - 4 > 12$

14) $-3x + 5 < -7$

15) $\frac{x}{7} - 4 \leq 2$

Place the number to the correct answer for questions 1 through 15 in the box below.

$x \leq 42$	$x > 4$	$x > 8$	$x \leq 4$	$x > 3$	$x < 12$	$x < -14$	$x < 10$	$x \leq -12$	$x < -5$	$x < -1$	$x < 7$	$x \geq -3$	$x > 19$	$x \leq -15$

The slope *m* of a line describes how steep it is. The slope is calculated by finding the quotient of the vertical change (change in y) and the horizontal change (change in x). Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Find the slope of the line that contains each pair of points.

1) (2, 4), (4, 6)

2) (3, 2), (-2, -8)

3) (-1, 3), (-2, 5)

4) (8, -3), (10, 0)

5) (0, 0), (6, -3)

6) (3, 4), (-1, 4)

7) (-4, 7), (-7, 15)

8) (2, -2), (6, 5)

9) (4, 3), (4, -5)

10) (2, 8), (7, -7)

Place the number to the correct answer for questions 1 through 10 in the box below.

No slope	2	-3	$\frac{3}{2}$	1	0	$\frac{-1}{2}$	$\frac{7}{4}$	$\frac{-8}{3}$	-2

The number 18 is not a perfect square, but it does have a perfect square factor. $\sqrt{18} = \sqrt{9} \bullet \sqrt{2}$ **should be further simplified to** $3\sqrt{2}$**. Simplify the following radicals. Think of the largest perfect square that can be simplified.**

1) $\sqrt{28}$ **2)** $-\sqrt{18}$ **3)** $-\sqrt{8}$

4) $\pm\sqrt{75}$ **5)** $\sqrt{63}$ **6)** $\sqrt{500}$

7) $-\sqrt{242}$ **8)** $-\sqrt{50}$ **9)** $\sqrt{700}$

10) $\sqrt{98}$ **11)** $\sqrt{20}$ **12)** $\sqrt{45}$

13) $-\sqrt{24}$ **14)** $\sqrt{12}$ **15)** $\pm\sqrt{48}$

Place the number to the correct answer for questions 1 through 15 in the box below.

$\pm4\sqrt{3}$	$2\sqrt{3}$	$\pm5\sqrt{3}$	$2\sqrt{7}$	$10\sqrt{7}$	$-3\sqrt{2}$	$-11\sqrt{2}$	$-2\sqrt{2}$	$-5\sqrt{2}$	$7\sqrt{2}$	$-2\sqrt{6}$	$2\sqrt{5}$	$3\sqrt{5}$	$10\sqrt{5}$	$3\sqrt{7}$

Multiply the following either using Distributive Property or FOIL:

1) $(x+4)(x+8)$

2) $(x-4)(x+7)$

3) $(x-5)(x-8)$

4) $(x+9)(x-8)$

5) $(x+3)(x-6)$

6) $(x+7)(x-8)$

7) $(x+10)(x+8)$

8) $(x-11)(x+2)$

9) $(x-12)(x+4)$

10) $(x+15)(x-3)$

11) $(2x+1)(x+3)$

12) $(2x-3)(x+5)$

13) $(2x-5)(3x+4)$

14) $(3x+5)(2x+4)$

Place the number to the correct answer for questions 1 through 14 in the box below.

$x^2+3x-28$	$6x^2-7x-20$	$x^2+12x+32$	$2x^2+7x-15$	$x^2-13x+40$	$x^2+18x+80$	x^2+x-72
$x^2-3x-18$	$x^2+12x-45$	$x^2-9x-22$	$2x^2+7x+3$	x^2-x-56	$6x^2+22x+20$	$x^2-8x-48$

Factor the following trinomials.

1) $x^2 + 5x + 6$

2) $x^2 + 9x + 8$

3) $x^2 + 12x + 32$

4) $x^2 + 15x + 26$

5) $x^2 + 7x + 12$

6) $x^2 + 7x + 6$

7) $x^2 + 7x + 10$

8) $x^2 - 9x + 20$

9) $x^2 - 9x + 18$

10) $x^2 - 9x + 14$

11) $x^2 - 9x + 8$

12) $x^2 - 10x + 24$

13) $x^2 + 10x - 11$

14) $x^2 + 10x - 39$

15) $x^2 + 8x - 20$

16) $x^2 + 5x - 14$

17) $x^2 + 4x - 21$

18) $x^2 - 4x - 12$

19) $x^2 - 8x - 20$

20) $x^2 - 11x - 60$

21) $x^2 - 9x - 10$

Place the number to the correct answer for questions 1 through 21 in the box below.

$(x-1)(x+11)$	$(x+2)(x+5)$	$(x+2)(x+13)$	$(x-4)(x-5)$	$(x+1)(x+8)$	$(x+2)(x-6)$	$(x-2)(x+7)$
$(x-3)(x+13)$	$(x-4)(x-6)$	$(x-2)(x+10)$	$(x-3)(x-6)$	$(x+2)(x+3)$	$(x+2)(x-10)$	$(x+4)(x+8)$
$(x+3)(x+4)$	$(x+1)(x+6)$	$(x-2)(x-7)$	$(x-1)(x-8)$	$(x-3)(x+7)$	$(x+4)(x-15)$	$(x+1)(x-10)$

Simplify the following using the rules for exponents:

1) $x^2 \bullet x^3$

2) $x^5 \bullet x \bullet x^4$

3) $2x^5 \bullet 3x^4$

4) $-4x^3 \bullet 3x$

5) $-3x^3y(-2x^4)(xy^4)$

6) $x^3y \bullet x^4yz \bullet xy^4z^3$

7) $\left(x^2\right)^4$

8) $\left(x^3y\right)^5$

9) $\left(-2x^4y^3\right)^3$

10) $\left(\frac{1}{2}x^4\right)^3$

11) $\left(x^4\right)^3\left(x^2\right)^5$

12) $\left(-2xy\right)^3\left(3x^2y^2\right)^2$

13) $(2x)\left(3x^4\right)+\left(x^3\right)\left(5x^2\right)$

14) $(3x)^2(-4y)^3+(2y)^3(-7x)^2$

15) $7x^2y\left(3x+2xy-5y^2\right)$

16) $x^2y^2\left(y^3+y-2\right)$

Place the number to the correct answer for questions 1 through 16 in the box below.

$x^2y^5+x^2y^3-2x^2y^2$	$-8x^{12}y^9$	$x^{15}y^5$	$6x^8y^5$	x^5	$-72x^7y^7$	x^{10}	x^8
$21x^3y+14x^3y^2-35x^2y^3$	$-184x^2y^3$	$x^8y^6z^4$	$-12x^4$	$6x^9$	$.125x^{12}$	x^{22}	$11x^5$

Identify the following formulas for the circle:

Circumference (C) = _____ or _____

Area = _____

If π is used in the original information, leave your answer in terms of π, otherwise use $\pi \approx 3.14$. Given the missing part of the following:

1) $C = 24\pi$ cm diameter = _____ radius = _____ Area = ___ π cm^2

2) $C = 10\pi$ cm diameter = _____ radius = _____ Area = ___ π cm^2

3) $C = 7\pi$ cm diameter = _____ radius = _____ Area = ___ π cm^2

4) $C \approx 37.68$ cm diameter = _____ radius = _____ Area = _____ cm^2

5) $C \approx 15.7$ cm diameter = _____ radius = _____ Area = _____ cm^2

6) $C \approx 87.92$ cm diameter = _____ radius = _____ Area = _____ cm^2

7) $A = 49\pi$cm^2 diameter = _____ radius = _____ C = _____ π cm

8) $A = 100\pi$cm^2 diameter = _____ radius = _____ C = _____ π cm

9) $A \approx 28.26$ cm^2 diameter = _____ radius = _____ C = _____cm

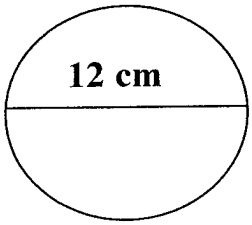
10) $A \approx 50.24$ cm^2 diameter = _____ radius = _____ C = _____cm

Place the number to the correct answer for questions 1 through 10 in the box below.

8 cm, 4 cm, 25.12 cm		14 cm, 7 cm, 14 π cm	
24 cm, 12 cm, 144 π cm^2		12 cm, 6 cm, 113.04 cm^2	
20 cm, 10 cm, 20 π cm		6 cm, 3 cm, 18.84 cm	
7 cm, 3.5 cm, 12.25 π cm^2		10 cm, 5 cm, 25 π cm^2	
28 cm, 14 cm, 615.44 cm^2		5 cm, 2.5 cm, 19.625 cm^2	

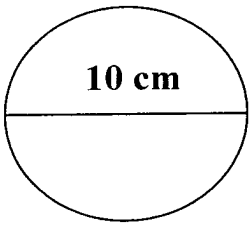
Leaving your answers in terms of π, find the Circumference and the Area of the following:

1)



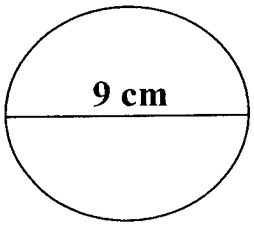
C = _____ A = _____

2)



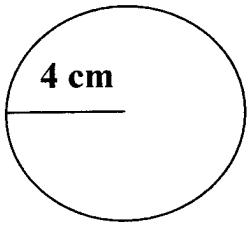
C = _____ A = _____

3)



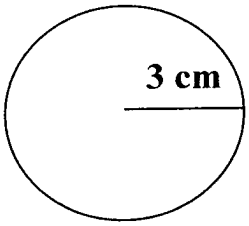
C = _____ A = _____

4)



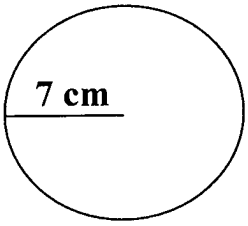
C = _____ A = _____

5)



C = _____ A = _____

6)



C = _____ A = _____

Place the number to the correct answer for questions 1 through 6 in the box below.

9 π cm, 20.25 π cm^2		12 π cm, 36 π cm^2	
6 π cm, 9 π cm^2		10 π cm, 25 π cm^2	
8 π cm, 16 π cm^2		14 π cm, 49 π cm^2	

The Pythagorean Theorem is $a^2 + b^2 = c^2$ where *a* and *b* are the legs of a right triangle and *c* is the length of the hypotenuse.

1) **Find the length of the hypotenuse of a right triangle whose legs are 5 cm and 12 cm.**

2) **Find the length of the hypotenuse of a right triangle whose legs are 7 cm and 24 cm.**

3) **Find the length of the hypotenuse of a right triangle whose legs are 15 cm and 8 cm.**

4) **If the hypotenuse of a right triangle is 20 cm and the length of one leg is 12 cm, what is the length of the other leg?**

5) **If the hypotenuse of a right triangle is 10 cm and the length of one leg is 8 cm, what is the length of the other leg?**

6) **If the hypotenuse of a right triangle is 5 cm and the length of one leg is 3 cm, what is the length of the other leg?**

7) **If the hypotenuse of a right triangle is 65 cm and the length of one leg is 16 cm, what is the length of the other leg?**

Place the number to the correct answer for questions 1 through 7 in the box below.

4 cm	16 cm	25 cm	63 cm	6 cm	13 cm	17 cm

Name _____ Date: _____ Team/Group _____

PART III: Punnett Squares (Big Idea 16)

1. Write if the following genotypes are homozygous or heterozygous.

   a. BB _____

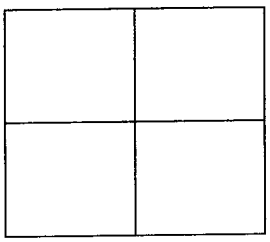
   b. Bb _____

   c. Tt _____

2. A geneticist was predicting the probability of different traits in rabbit offspring. He took a homozygous floppy eared female rabbit and mated her with a homozygous straight-eared male.

   F = floppy ears f = straight ears

   What is the probability that the offspring of these 2 rabbits will have straight ears?



   % Probability of straight eared offspring

   What is the % Probability of a homozygous genotype?

PART IV: SYMBIOTIC RELATIONSHIPS (Big Idea 17)

Symbiotic relationships describe close interactions between two or more different species. Write the definition for the following terms and give an example of each. You may draw pictures for your examples.

Term	Definition	Example
Parasitism		
Mutualism		
Commensalism		

Name _____ Date: _____ Team/Group _____

Part IV- Scientific Method (Big Idea 123)

For the following experiments, define the independent variable, dependent variable, and control group.

Vocabulary Word	Definition	Example
Test Variable	• The variable being changed. • Only one variable can be changed per experiment.	Height of dropping the ball
Outcome Variable	• The variable being measured. • Must be numerical (such as height, mass, distance, volume, etc...)	Size of the Crater
Control	• Not all projects will have a control.	None
Constants	• The factors that stay the same.	The ball, the person dropping the ball, weather conditions, surface

1. You decide to clean the bathroom. You notice that the show is covered in a stange green slime. You try to get rid of this slime by adding lemonade juice. You spray half of the shower with lemonade juice and spray the other half of the shower with water. After 3 days of spraying equal amounts 3 times a day, there is no change in the appearance of the green slime on either side of the shower.

   Independent Variable: _____

   Dependent Variable: _____

   Control Group: _____

2. You decide to clean your bedroom. You notice that your floor is covetred with clothes. You try to get rid of the clothes by throwing them into the air. You throw clothes from 1/3 of the room into the closet and a second 1/3 of the room straight up in the air. The last 1/3 of the room you leave the clothes on the floor. After 30 minutes of "cleaning" the floor of the room is now visible.

   Independent Variable: _____

   Dependent Variable: _____

   Control Group: _____

3. You want to test which size of soccer ball is easiest to juggle with your feet. You test a size 3, size 4, and size 5 ball. You count the seconds the ball stays in the air for each of the trials. You allow yourself to use both of your feet, knees, and head to juggle the ball.

   Independent Variable: _____

   Dependent Variable: _____

   Control Group: _____