PROJECT BASED LEARNING WITH FRACTIONS

MY

SMOOTHIE

BUSINESS

PLAN

NAME: Anne T.

MATH BLOCK: 2

Open a SMOOTHIE Shop

Name Anna

LESSON OUTLINE

You are planning a smoothie shop for your neighborhood. You are preparing to open your s[hop] to a few friends to test out four signature smoothie recipes. You need to create your menu and buy supplies for your opening.

Driving Question: How can I create a smoothie sh[op] that has enjoyable drinks in a range of flavors?

Follow the process below to complete your project

#1 Plan a smoothie shop - pick a name, logo, and location.

#2 Plan a menu.

#3 Calculate the amounts needed.

#4 Compare to available materials and create a shopping list.
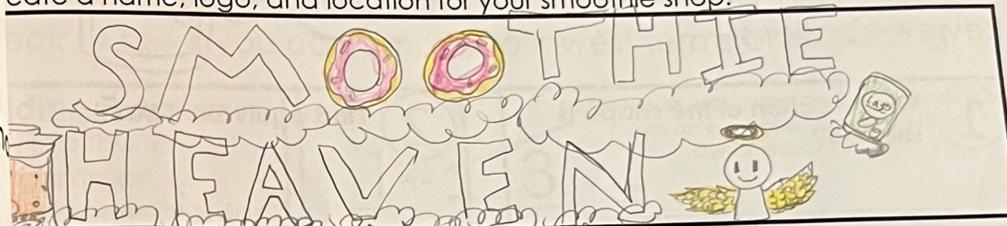
#5 Re-evaluate and finalize the menu.
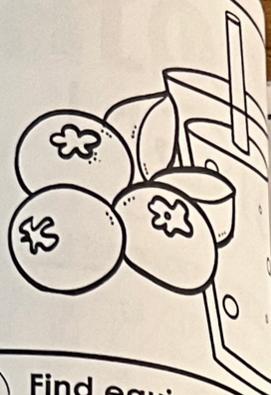
SMOOTHIE SHOP DESIGN

[Cr]eate a name, logo, and location for your smoothie shop.

[Us]e the grid below to draw a map of your neighborhood and label where you [wi]ll put your smoothie shop.
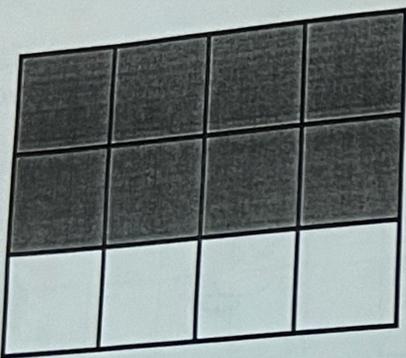
FRACTION CONCEPTS

Review fractions.

1 What fraction of the shape is shaded?

$$\frac{8}{12}$$

2 Find equivalent fractions.

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

$$\frac{1}{2} = \frac{2}{4}$$

$$\frac{2}{5} = \frac{4}{10}$$

3 Compare the fractions with <, >, and =.

$$\frac{1}{5} < \frac{3}{5}$$

$$\frac{3}{4} > \frac{2}{4}$$

$$\frac{3}{6} > \frac{4}{8}$$

4 When do you use fractions cooking?

When you use amounts

ADDING FRACTIONS

When adding fractions, use the lowest common denominator. Check to see if you can simplify to lowest terms after adding.

Adding Fractions:
- Find the lowest common denominator for both fractions.
- Make equivalent fractions with the common denominator.
- Add the numerators.
- Simplify if possible.

Multiply numerator and denominator by 2 to make an equivalent fraction with a denominator of 10.

$$\frac{1 \times 2}{5 \times 2} + \frac{3}{10} =$$

5/10 can be simplified to 1/2

$$\frac{2}{10} + \frac{3}{10} = \frac{5}{10} = \frac{1}{2}$$

2/10 is equivalent to 1/5

Circle the addition problems with common denominators.

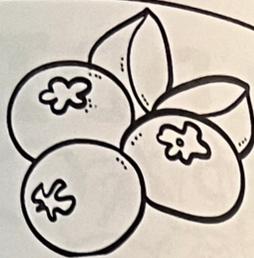$$\frac{2}{3} + \frac{3}{5}$$

$$\boxed{\frac{2}{6} + \frac{5}{6}}$$

$$\frac{8}{10} + \frac{7}{12}$$
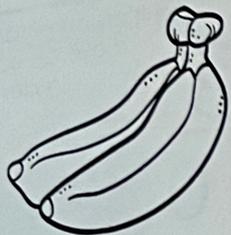
$$\boxed{\frac{1}{7} + \frac{6}{7}}$$

$$\frac{4}{9} + \frac{3}{4}$$

FRACTION PRACTICE

Practice adding fractions by adding the amounts of each item together.

1
Bananas: 2/3 cup

Raspberries: 2/3 cup

Total: _1⅓_

2
Almonds: 1/4 cup

Chocolate: 1/6 cup

Total: _5/12_

3
Spinach: 1/2 cup

Kale: 1/2 cup

Total: _1_

4
Strawberries: 2/3 cup

Honey: 1/4 cup

Total: _12/12_

5
Cherries: 2/3 cup

Almond Milk: 3/4 cup

Total: _1 5/12_

6
Cookies: 1/3 cup

Vanilla: 1/6 cup

Total: _3/6 = 1/2_

RECIPE OPTIONS

DIRECTIONS

You need to choose items for your smoothie recipes. From the list of choices, pick at least 2 fruits or greens, one liquid, and one add-on each. Write your choices on the lines on the next page to create 4 different signature smoothie blends to sell at your shop.

Fruit	Amount	Liquid	Amount
Banana	2/3 cup	Almond Milk	3/4 cup
Blackberry	2/3 cup	Apple Juice	3/4 cup
Blueberry	2/3 cup	Coconut Milk	3/4 cup
Mango	2/3 cup	Oat Milk	3/4 cup
Pineapple	2/3 cup	Orange Juice	3/4 cup
Raspberry	2/3 cup	Soy Milk	3/4 cup
Strawberry	2/3 cup	Water	3/4 cup
Greens	**Amount**	**Add-Ons**	**Amount**
Kale	1/2 cup	Cinnamon	1/6 cup
Romaine Lettuce	1/2 cup	Cocoa Powder	1/6 cup
Spinach	1/2 cup	Cookie Pieces	1/3 cup
Swiss Chard	1/2 cup	Protein Powder	1/4 cup
Wheat Grass	1/4 cup	Vitamin Boost	1/3 cup

RECIPE OPTIONS

Smoothie #1

- ☐ Banana
- ☐ strawberry
- ☐ soy milk
- ☐ romaine lettuce
- ☐ cookie pieces

Smoothie #...

- ☐ pineapple
- ☐ Mango
- ☐ coconut milk
- ☐ Wheat grass
- ☐ cinnamon

Smoothie #3

- ☐ Pineapple
- ☐ Strawberry lk
- ☐ Kale
- ☐ Vitamin boost
- ☐ Oat milk

Smoothie #...

- ☐ Banana berry
- ☐ Blueberry
- ☐ Oat milk kale
- ☐ cinnamon hard
- ☐ protein powder

CALCULATE TOTALS

...at your smoothie recipes. For each ingredient that is used more than once in your recipes, ...the amount needed for each recipe to find out the total amount of each ingredient you ...need to purchase.

Smoothie 1	2/3 cup
Smoothie 3	2/3 cup
Total needed	4/3 = 1 1/3 cup

...n: **Bananas**

1

Smooth 1	2/3
Smooth 4	2/3
total needed	4/3 = 1⅓

Item: Bananas

smooth 1	2/3
smooth 3	2/3
total	4/3 = 1⅓

...n: straw berrys

3

smooth 3	3/4
smooth 4	3/4
total	6/4 = 1½

Item: Oat milk

smooth 2	1/6
smooth 4	1/6
total	2/6

...m: cinnamon

5

smooth 2	2/3
smooth 3	2/3
total	4/3 = 1⅓
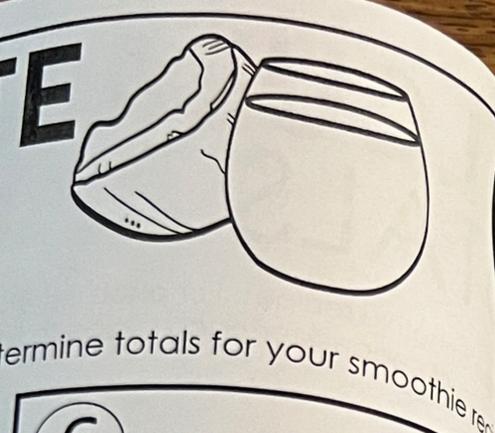
Item: pineapple

...ctions that have a whole number and a fraction are called mixed numbers. When ...ding mixed numbers, add the fraction amounts first, then add the whole numbers. ...en adding mixed numbers it can be helpful to arrange them vertically.

...dding Mixed ...umbers:

Find the lowest common denominator for all the fractions. Make equivalent fractions. Add the fractions. Add the whole numbers. Simplify if possible.

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

$=$

$$2 \frac{2}{6}$$
$$+ 1 \frac{4}{6}$$

Rewrite the fractions with common denominators.

$$3 \frac{6}{6} = 4$$

6/6 can be rewritten as 1 whole. 3 +1 = 4

...rcle the fractions that have been simplified to their lowest terms.

$2 \frac{2}{6}$ $\frac{7}{8}$ $3 \frac{2}{3}$ $4 \frac{1}{4}$

$1 \frac{5}{4}$ $\frac{9}{5}$ $1 \frac{6}{9}$ $\frac{8}{12}$

MIXED NUMBER PRACTICE

DIRECTIONS
Add the mixed numbers. Simplify if possible.

① $3\frac{2}{4}$

$+\ 2\frac{1}{8}$

$8\frac{5}{8}$

② $1\frac{2}{6}$

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

$1\frac{4}{6}$

③ $4\frac{1}{4}$

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

$5\frac{7}{12}$

(handwritten work) 4:4,8,12 3:3,6,12 $4\frac{1}{4}\times\frac{3}{3}=4\frac{3}{12}$ $4\frac{3}{12}=5\frac{7}{12}$ $1\frac{1}{3}\times\frac{4}{4}=1\frac{4}{12}$

④ $5\frac{3}{10}$

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

$7\frac{5}{10}$

(handwritten work) $5\frac{3}{10}$ $2\frac{1}{5}\times2=\frac{2}{10}$ $5\frac{3}{10}$

⑤ $2\frac{4}{6}$

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

$3\frac{5}{12}$

(handwritten work) $2\frac{4}{6}+\frac{3}{4}$ 6:6,12,18 4:4,8,12,16 $2\frac{4}{6}\times\frac{2}{2}=2\frac{8}{12}$ $\frac{2\frac{8}{12}+\frac{9}{12}}{\frac{17}{12}}$ $\frac{3}{4}\times\frac{3}{3}=\frac{9}{12}$ $3\frac{5}{12}$

⑥ $6\frac{3}{5}$

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

$10\frac{14}{15}$

(handwritten work) $6\frac{3}{5}+4\frac{1}{3}$ $\frac{3}{5}\times\frac{3}{3}=$ $4\frac{1}{3}\times\frac{5}{5}=$

PLAN AN OPENING

You are inviting 10 people to your opening. Make a list of the people who are coming and the smoothie each person orders. Determine the total quantity needed for each type of smoothie.

Person Invited	Smoothie Choice
Ghabbrielle	Smoothie #4
Samuel	Smoothie #4
Cameron	Smoothie #1
Jaira	Smoothie #1
Nia	Smoothie #1 (extra cookie pieces) (last one he lifted once)
Kyle	Smoothie #4
Maria	Smoothie #4
Felix	Smoothie #2
Mrs. Guynn	Smoothie #3
Mrs. Bell	Smoothie #3
Jahaan	Smoothie #2

Smoothie	Total Needed
#1	3
#2	2
#3	2
#4	4

PLAN AN OPENING

Looking back at your recipes, add the amounts you need for each item for all 10 smoothies.

EX

4 smoothies need almond milk.

$3/4$ c + $3/4$ c + $3/4$ c + $3/4$ c = $12/4$ cup

$12/4$ cup = 3 cups

Almond Milk = 3 cups

---

(1) smoothie 1 = 3
smoothie 4 = 4

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

$\frac{14}{3} = 4\frac{1}{3}$

Item: Banana $\left(\frac{2}{3}c\right)$

---

(2) smoothie 2 = 2
smoothie 3 = 2

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

$\frac{8}{3} = 2\frac{2}{3}$

Item: Pineapple $\left(\frac{2}{3}c\right)$

---

(3) smoothie 3 = 2
smoothie 4 = 4

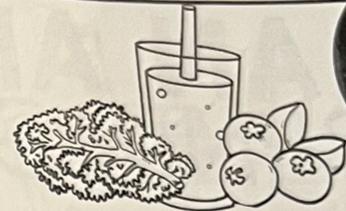$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} +$

Item: Oat milk

---

(4) smoothie 1 = 3
smoothie 3 = 2

$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{5}{6}$

Item: Cinnamon $\left(\frac{1}{6}c\right)$

---

(5) smoothie 2 = 2
smoothie 4 = 4

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

4

Item: Strawberry $\left(\frac{2}{3}\right)$

PLAN AN OPENING
STEP 3

...this page if you need more space to determine totals for your smoothie recipes.

smoothie 1 = 3

$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$

Item: Soy milk $\frac{3}{4}$

---

smoothie 4 = 4

$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$

Item: Blueberry $\frac{2}{3}$

---

smoothie 3 = 2

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$

Item: vitamin boost $\frac{1}{3}$

---

(7) smoothie 3 = 2

$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$

Item: wheat grass $\frac{1}{4}$

---

(9) smoothie 1 = 3

$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{3}{2} = 1\frac{1}{2}$
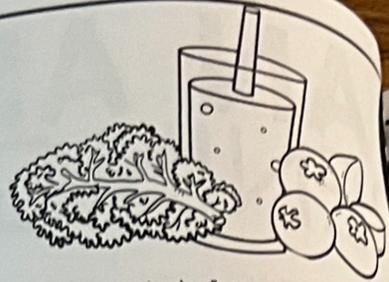
Item: Kale $\frac{1}{2}$

---

(11) smoothie 4 = 4

$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1$

Item: protein powder $\frac{1}{4}$

PLAN AN OPENING

Use this page if you need more space to determine totals for your smoothie

12

smoothie 2 = 2

$$\frac{3}{4} + \frac{3}{4} = \frac{6}{4} = 1\frac{2}{4}$$

Item: _coconut milk_ $\boxed{\frac{3}{4}}$

14

smoothie 1 = 3

$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{3}{2} = 1\frac{1}{2}$$

Item: _romaine lettuce_ $\boxed{\frac{1}{2}}$

16

Item: _____

13

smoothie 2 = 2

$$\frac{2}{3} + \frac{2}{3} = \frac{4}{3}$$

Item: _Mango_ $\boxed{\frac{2}{3}}$

15

smoothie 1 = 3

$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$$

Item: _cookie pieces_

17

Item: _____

FIND TOTALS

DIRECTIONS

Next to each available item, record the amount you will need to make smoothies for all 10 people.

SMOOTHIE ITEMS

Fruit	Amount	Liquid	Amount
Banana	$4\frac{1}{3} = \frac{14}{3}$	Almond Milk	
Blackberry	~~Berry~~	Apple Juice	
Blueberry	$\frac{8}{3} = 2\frac{2}{3}$	Coconut Milk	$\frac{6}{4} = 1\frac{2}{4}$
Mango	$\frac{4}{3} = 1\frac{1}{3}$	Oat Milk	$\frac{18}{4} = 4\frac{2}{4}$
Pineapple	$\frac{8}{3} = 2\frac{2}{3}$	Orange Juice	
Raspberry		Soy Milk	$\frac{9}{4} = 2\frac{1}{4}$
Strawberry	$\frac{12}{3} = 4$	Water	
Greens	**Amount**	**Add-Ons**	**Amount**
Kale	$\frac{3}{2} = 1\frac{1}{2}$	Cinnamon	$\frac{5}{6}$
Romaine Lettuce	$\frac{3}{2} = 1\frac{1}{2}$	Cocoa Powder	
Spinach		Cookie Pieces	$\frac{3}{3} = 1$
Swiss Chard		Protein Powder	$\frac{4}{4} = 1$
Wheat Grass	$\frac{2}{4}$	Vitamin Boost	$\frac{2}{3}$

COMPARING PRACTICE

DIRECTIONS
Compare the two fractions using <, >, =.
Show the equivalent fractions you used to compare the two fractions.

$$\frac{7}{9} < \frac{2}{3}$$

$$\frac{3}{5} < \frac{3}{4}$$

$$\frac{4}{5} > \frac{8}{10}$$

$$\frac{1}{2} > \frac{4}{7}$$

$$\frac{6}{15} < \frac{2}{3}$$

$$\frac{4}{6} < \frac{7}{8}$$

COMPARING FRACTIONS

When you compare fractions, first make the denominators equal. Then, compare the amounts.

Comparing Fractions:

1. Find the lowest common denominator for the fractions you are comparing.
2. Make equivalent fractions with the common denominator.
3. Compare.

Rewrite both fractions with the lowest common denominator.

$$\frac{4^{\times 4}}{9_{\times 4}} \bigcirc \frac{3^{\times 9}}{4_{\times 9}}$$

Multiply numerator and denominator by the same number to make an equivalent fraction.

$$\frac{16}{36} \enspace \bigcirc\!\!< \enspace \frac{27}{36}$$

Practice comparing the fractions using <, >, =.

①

$$\frac{2}{5} \enspace \bigcirc\!\!< \enspace \frac{3}{6}$$

②

$$\frac{4}{8} \enspace \bigcirc\!\!= \enspace \frac{5}{10}$$

MAKE A SHOPPING LIST

Make a shopping list of materials you need. Compare the amount you need with the amount in one package. Remember to use common denominators when comparing. Decide if it is enough or if you will need to buy a second package.

ITEM	AMOUNT PER PACKAGE	<, >, =	Amount Needed	Is one package enough?	Number of packages needed
Bananas	$4\frac{1}{4}$	<	$4\frac{1}{3}$	No	2
Blueberry	$4\frac{3}{4}$	>	$2\frac{2}{3}$	yes	1
Mango	$3\frac{2}{3}$	>	$1\frac{1}{3}$	yes	1
Pineapple	$3\frac{2}{3}$	>	$2\frac{2}{3}$	yes	1
Strawberry	$4\frac{1}{2}$	>	4	yes	1
Coconut milk	$3\frac{1}{2}$	>	$1\frac{2}{4}$	yes	1
Oat milk	$3\frac{1}{2}$	<	$4\frac{2}{4}$	No	2
Soy milk	$3\frac{1}{2}$	>	$2\frac{2}{4}$	yes	1
Kale	$3\frac{3}{6}$	>	$1\frac{1}{2}$	yes	1
Romaine lettuce	$4\frac{4}{6}$	>	$1\frac{1}{2}$	yes	1
Wheat grass	$2\frac{1}{3}$	>	$2\frac{2}{4}$	yes	1
Cinnamon	$\frac{1}{2}$	=	$\frac{5}{6}$	yes	1
Ice pieces	$2\frac{1}{2}$	>	1	yes	1
Protien powder	3	>	1	yes	1
Vitamin boost	3			yes	1

COMPARE AMOUNTS
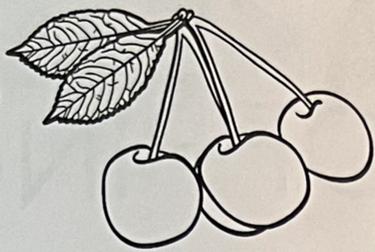
Look at the list of available items. The amounts listed are the amounts the items are sold in. Record the amount you need of each item to make all 10 smoothies for your guests. On the next page, make a shopping list of supplies.

Fruit	Amount Per Package	Amount Needed	Liquid	Amount Per Package	Amount Needed
Banana	4 1/4 cups	$4\frac{1}{3}$	Almond Milk	4 cups	
Blackberry	4 3/4 cups		Apple Juice	4 1/2 cups	
Blueberry	4 3/4 cups	$2\frac{2}{3}$	Coconut Milk	3 1/2 cups	$1\frac{2}{4}$
Mango	3 2/3 cups	$1\frac{1}{3}$	Oat Milk	3 1/2 cups	$4\frac{2}{4}$
Pineapple	3 2/3 cups	$2\frac{2}{3}$	Orange Juice	4 1/2 cups	
Raspberry	4 3/4 cups		Soy Milk	3 1/2 cups	$2\frac{1}{4}$
Strawberry	4 1/2 cups	4	Water	5 cups	

Greens	Amount Per Package	Amount Needed	Add-Ons	Amount Per Package	Amount Needed
Kale	3 3/6 cups	$1\frac{1}{2}$	Cinnamon	1/2 cup	$\frac{5}{6}$
Romaine Lettuce	4 4/6 cups	$1\frac{1}{2}$	Cocoa Powder	1 cup	
Spinach	3 3/6 cups		Cookie Pieces	2 1/2 cups	1
Swiss chard	4 cups		Protein Powder	3 cups	1
Wheat Grass	2 1/3 cups	$\frac{3}{4}$	Vitamin Boost	3 cups	$\frac{2}{3}$

FINALIZE MENU

After your soft opening, you're ready to launch your smoothie shop to the public. Decide if you are making changes to your smoothies. Design your menu. Include your logo, catchy names for your smoothie choices, and ingredients.

SMOOTHIE HEAVEN

#1 Pink Angel
- Banana
- Strawberry
- Soy milk
- Cookie pieces
- Romaine lettuce

#2 Cinnamon chute
- [ ] pineapple
- [ ] Mango
- [ ] coconut milk
- [ ] wheat grass
- [ ] cinnamon

#3 nutty explosion
- pineapple
- strawberry
- kale
- vitamin boost
- oat milk

#4 Blue banana
- [ ] Banana
- [ ] blueberry
- [ ] oat milk
- [ ] cinnamon
- [ ] protein powder

SMOOTHIE SHOP
WRAP UP

It's time to share your smoothie shop menu. Describe each of the things below and then explain how you made your decisions.

Smoothie Shop

Explain how you made your decisions

1. Menu Items

How did you choose which items to include in your smoothies?

1. I chose different ling___ for my smoothies so I tr___ to make a healthy but a good tasting for it so they dont throw up.

2. Signature Smoothies

How did you decide on names for your signature smoothies?

2. I chose these names b___ of the color I think it would turn out blue, pink o___ any other color but som___ have types of nuts and i___ tastastes nutty so I pu___ nutty as one.

3. Extra Items

What other types of items would you like to include in your smoothies that weren't included on the list?

3. I would mostly like add oranges, dragon fruit, g___ pomegranetes, Ice cream, yogu___ Blood orange, and avocado___

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RUBRIC

	4	3	2	1
Background & Addition ___ing	Student took notes on the topic and asked relevant questions. Student researched beyond the class time provided.	Student took time in class to learn and take sufficient notes on the topic.	Very little effort was put into taking notes on the topic.	No effort was put into taking notes on the topic.
___oration	Student showed leadership in interactions with other students. They shared ideas and feedback and listened to ideas and feedback.	Student collaborated well with other students during the project. They shared ideas and feedback and listened to ideas and feedback.	Student had trouble sharing ideas and feedback and/or listening to ideas and feedback.	Student did not actively participate in collaboration opportunities.
___lations	Student completed 100% of the math calculations correctly.	Student completed about 80% of the math calculations correctly.	Student completed about 60% of the math calculations correctly.	Student completed less than 60% of the math calculations correctly.
Wrap-Writing	Student created a writing piece that approached the topic from all angles and addressed all possible concerns.	Student created a writing piece that gave solid reasons and evidence to support their ideas.	Student created a writing piece that was missing key reasons and evidence. Their decisions were left unsupported.	Student did not attempt or finish the writing piece.
Visual ___entation	The students visual garden plan is drawn and labeled in an easy to understand manner. The went above and beyond to present their work and ideas in a unique way.	The students visual garden plan is drawn and labeled according to the directions.	Student's visual garden plan was difficult to understand or unprepared.	Student did not complete a full visual plan of their garden.

18.5 / 20 = 93

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