

Name _____

Critical Thinking

Anna has a garden in her backyard. Here is a list of the plants in her garden.

Plants	Number
tomatoes	4
lettuce	5
violets	7
cabbages	2
roses	5
daisies	4
cucumbers	6

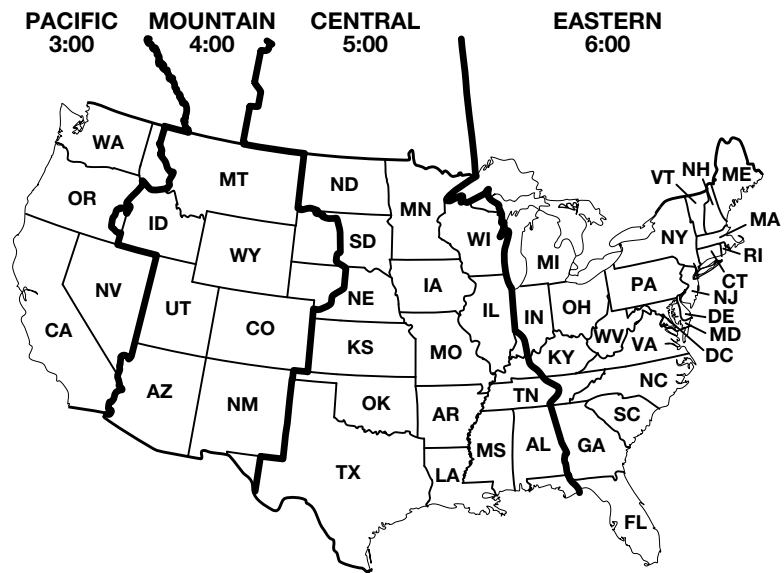
1. What fraction of Anna's garden are tomatoes? _____
2. What fraction of Anna's garden are roses? _____
3. How many of the plants in the garden are flowers? _____
4. What fraction of Anna's garden are vegetables? _____
5. What fraction of the flowers are violets? Explain.

6. What fraction of the vegetables are cabbages? Explain.

Name _____

Critical Thinking

Did you know that the hour of the day depends on where you are in the world? When New York City students are opening up their schoolbooks, San Francisco students are still fast asleep. The mainland United States is divided into 4 time zones.



Use the map to find the time. Label the time A.M. or P.M.

1. It is 4:00 P.M. in Pennsylvania.
What time is it in Mississippi?
2. It is 11:00 A.M. in Nevada.
What time is it in Colorado?

3. The time in Dublin, Ireland is 5 hours later than the time in New York City. When it's 12:00 P.M. in Missouri, what time is it in Dublin?

4. Mike, who lives in Illinois, starts his paper route at 3:30 P.M. He arrives back home 43 minutes later and immediately calls a friend who lives in Utah. When he calls, what time is it in Utah?

5. a. Mr. Inverso leaves work on the east side of Nebraska at 5:12 P.M. He drives to a convenience store, arriving at 5:27 P.M. He spends 6 minutes in the store. It takes him another 13 minutes to drive home to the west side of Nebraska. What time is it when he arrives home?

- b. Describe how you solved the problem.

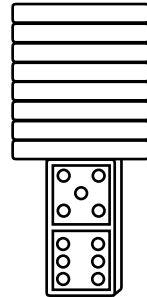
Name _____

Critical Thinking

Choose a method to solve these problems about feet, yards, and miles.

1. The Boston Marathon race takes place in the streets of greater Boston every spring and covers a distance of 26 miles 385 yards. When it was first run in 1897, the course covered a distance of 24 miles 1,232 yards. How much farther do participants have to run today than in 1897? Explain how you found the solution.

2. The world record for stacking dominoes is held by Aleksandr Bendikov of Belarus, who stacked 522 dominoes on a single supporting domino. The dominoes were stacked flat, one on top of another. If 4 dominoes equals 1 inch, about how many feet high was the stack? Explain how you found your solution.



3. The staircase in the Empire State Building in New York City has 1,575 steps. If each step is 8 inches tall, how many feet would you climb if you walked up the staircase? Explain your method of solving the problem.

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Critical Thinking

A group of 4th-grade students was studying the state of Missouri. They took a survey to find out how many classmates had ever visited Kansas City or St. Louis.

Here is what they found out:

- $\frac{1}{2}$ of the class had been to St. Louis but not Kansas City.
- $\frac{1}{6}$ of the class had been to Kansas City but not St. Louis.
- $\frac{1}{4}$ of the class had been to neither city.
- $\frac{1}{12}$ of the class had been to both cities.

Use patterns to complete the table. Then use it to answer the questions.

Part of the Class	Number of Students in the Class			
	12	24	36	48
$\frac{1}{12}$	1	2		
$\frac{2}{12}$	2	4	6	
$\frac{3}{12}$		6	9	12
$\frac{4}{12}$			12	16
$\frac{5}{12}$	5			
$\frac{6}{12}$		12		
$\frac{7}{12}$			21	
$\frac{8}{12}$				32
$\frac{9}{12}$			27	
$\frac{10}{12}$		20		
$\frac{11}{12}$	11			
$\frac{12}{12}$			36	

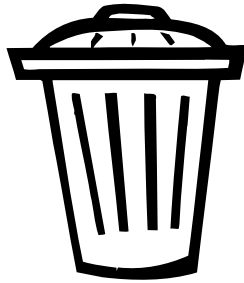
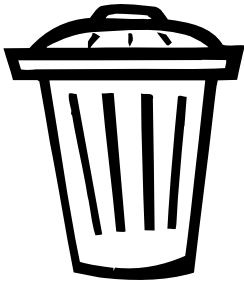
1. If there are 24 students in the class, how many have been to neither city? _____
2. If 4 students have been to both cities, how many students are in the class? _____
3. If 6 students have been to neither city, how many students have been to both cities? _____

Name _____

Critical Thinking

Classify the fractions.

Write the letter of the can where each fraction could be placed. There will be an equal number of fractions for each can.



A. Less than $\frac{1}{2}$

B. Equal to $\frac{1}{2}$

C. Greater than $\frac{1}{2}$

1. $\frac{1}{4}$ _____

2. $\frac{5}{8}$ _____

3. $\frac{5}{10}$ _____

4. $\frac{3}{4}$ _____

5. $\frac{3}{8}$ _____

6. $\frac{5}{9}$ _____

7. $\frac{6}{12}$ _____

8. $\frac{3}{7}$ _____

9. $\frac{11}{20}$ _____

10. $\frac{3}{5}$ _____

11. $\frac{13}{24}$ _____

12. $\frac{2}{3}$ _____

13. $\frac{7}{12}$ _____

14. $\frac{4}{10}$ _____

15. $\frac{9}{18}$ _____

16. $\frac{7}{20}$ _____

17. $\frac{7}{14}$ _____

18. $\frac{2}{4}$ _____

19. $\frac{8}{16}$ _____

20. $\frac{1}{3}$ _____

21. $\frac{12}{24}$ _____

22. $\frac{5}{14}$ _____

23. $\frac{3}{6}$ _____

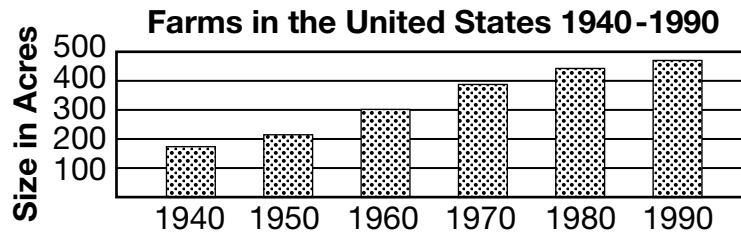
24. $\frac{9}{20}$ _____

25. Describe the patterns you see in the fractions in each category.

Name _____

Critical Thinking

The graph shows changes in the size of the average farm from 1940 to 1990.



You want to buy a farm. Before you make a decision about which farm to buy, you decide to find out some facts about the size of farms.

1. Based on the graph, how has the average size of a farm changed from 1940 to 1990?

2. About how much larger was an average farm in 1980 than an average farm in 1950?

3. If you bought a farm that was double the size of an average farm in 1940, would your farm be as large as the average farm in 1990? Explain.

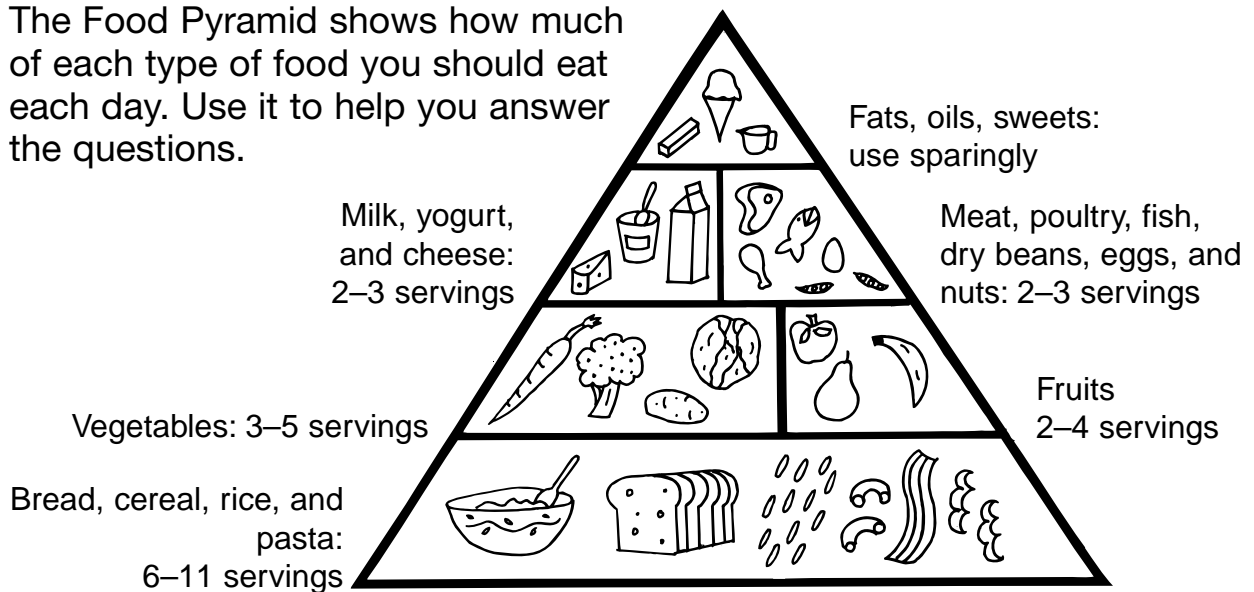
4. Suppose you buy a 400-acre farm.
 - a. What year's average farm size is your farm closest to in size? _____
 - b. About what fractional part of your farm is represented by an average farm in 1960?

 - c. Predict how the size of an average farm in the year 2000 will compare to the size of your farm. Give reasons for your prediction.

Name _____

Critical Thinking

The Food Pyramid shows how much of each type of food you should eat each day. Use it to help you answer the questions.



1. Kari eats equal numbers of servings of bread, cereal, rice, and pasta, and she stays within the guidelines. How many servings of each does she have? _____
2. For breakfast, Kari had one serving of cereal and 1 serving of fruit. What is the minimum amount of fruit she needs during the rest of the day?
_____ The maximum? _____
3. At lunch, Kari had one serving each of green beans, peas, and carrots. She likes vegetables and wants to eat the maximum recommended amount. How many servings can she have at dinner? _____
4. Kari had one serving of milk with her breakfast cereal. She had milk and yogurt at lunch. Should she have cheese with dinner? Explain.

5. Phil had an egg salad sandwich at lunch. With his egg salad sandwich, Phil had a salad and carrot sticks. Does he need to have another serving of vegetables for dinner? Explain.

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tomatoes	4
lettuce	5
violets	7
cabbages	2
roses	5
daisies	4
cucumbers	6

1. What fraction of Anna's garden are tomatoes?

$$\frac{4}{33}$$

2. What fraction of Anna's garden are roses?

$$\frac{5}{33}$$

3. How many of the plants in the garden are flowers?

$$16$$

4. What fraction of Anna's garden are vegetables?

$$\frac{17}{33}$$

5. What fraction of the flowers are violets? Explain.

$\frac{7}{16}$; There are 16 flower plants in the garden, and 7 of the

flower plants are violets, so 7 is the numerator and 16 is the denominator.

6. What fraction of the vegetables are cabbages? Explain.

$\frac{2}{17}$; There are 17 vegetable plants in the garden, and 2 of the

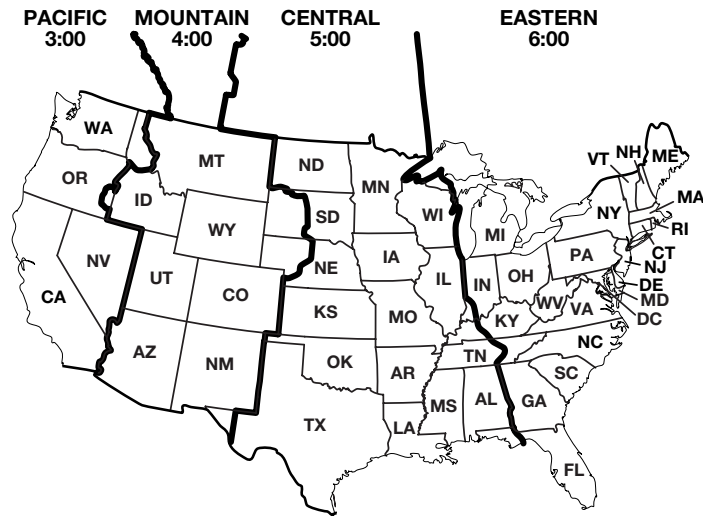
vegetable plants are cabbages, so 2 is the numerator and 17 is the denominator.

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12:00 P.M.

3. The time in Dublin, Ireland is 5 hours later than the time in New York City. When it's 12:00 P.M. in Missouri, what time is it in Dublin?

6:00 P.M.

4. Mike, who lives in Illinois, starts his paper route at 3:30 P.M. He arrives back home 43 minutes later and immediately calls a friend who lives in Utah. When he calls, what time is it in Utah?

3:13 P.M.

5. a. Mr. Inverso leaves work on the east side of Nebraska at 5:12 P.M. He drives to a convenience store, arriving at 5:27 P.M. He spends 6 minutes in the store. It takes him another 13 minutes to drive home to the west side of Nebraska. What time is it when he arrives home?

4:46 P.M.

- b. Describe how you solved the problem.

Possible answer: I added the times (5:27 + :06 + :13) to find the time in eastern Nebraska, then subtracted 1 hour

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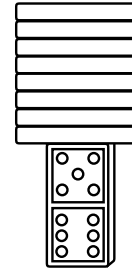
1 mile 913 yd; subtract 24 miles 1,232 yd from 26 miles

385 yd, change 26 miles to 25 miles 1,760 yd,

1,760 yd + 385 yd = 2,145; 25 miles 2,145 yd – 24 miles

1,232 yd = 1 mile 913 yd.

2. The world record for stacking dominoes is held by Aleksandr Bendikov of Belarus, who stacked 522 dominoes on a single supporting domino. The dominoes were stacked flat, one on top of another. If 4 dominoes equals 1 inch, and about how many feet high was the stack? Explain how you found your solution.



About 11 ft; 4 dominoes = 1 in., so $522 \div 4 =$ about 130 in.,

$130 \div 12 =$ about 11 ft

3. The staircase in the Empire State Building in New York City has 1,575 steps. If each step is 8 inches tall, how many feet would you climb if you walked up the staircase? Explain your method of solving the problem.

1,050 ft; $1,575 \times 8 = 12,600$ in., $12,600 \div 12 = 1,050$ ft

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Critical Thinking

A group of 4th grade students were studying the state of Missouri. They took a survey to find out how many classmates had ever visited Kansas City or St. Louis.

Here is what they found out:

- $\frac{1}{2}$ of the class had been to St. Louis but not Kansas City.
- $\frac{1}{6}$ of the class had been to Kansas City but not St. Louis.
- $\frac{1}{4}$ of the class had been to neither city.
- $\frac{1}{12}$ of the class had been to both cities.

Use patterns to complete the table. Then use it to answer the questions.

Part of the Class	Number of Students in the Class			
	12	24	36	48
$\frac{1}{12}$	1	2	3	4
$\frac{2}{12}$	2	4	6	8
$\frac{3}{12}$	3	6	9	12
$\frac{4}{12}$	4	8	12	16
$\frac{5}{12}$	5	10	15	20
$\frac{6}{12}$	6	12	18	24
$\frac{7}{12}$	7	14	21	28
$\frac{8}{12}$	8	16	24	32
$\frac{9}{12}$	9	18	27	36
$\frac{10}{12}$	10	20	30	40
$\frac{11}{12}$	11	22	33	44
$\frac{12}{12}$	12	24	36	48

1. If there are 24 students in the class, how many have been to neither city?
2. If 4 students have been to both cities, how many students are in the class?
3. If 6 students have been to neither city, how many students have been to both cities?

6

48

2

Name _____

Critical Thinking

Classify the fractions.

Write the letter of the can where each fraction could be placed. There will be an equal number of fractions for each can.



A. Less than $\frac{1}{2}$

B. Equal to $\frac{1}{2}$

C. Greater than $\frac{1}{2}$

1. $\frac{1}{4}$ **A**

2. $\frac{5}{8}$ **C**

3. $\frac{5}{10}$ **B**

4. $\frac{3}{4}$ **C**

5. $\frac{3}{8}$ **A**

6. $\frac{5}{9}$ **C**

7. $\frac{6}{12}$ **B**

8. $\frac{3}{7}$ **A**

9. $\frac{11}{20}$ **C**

10. $\frac{3}{5}$ **C**

11. $\frac{13}{24}$ **C**

12. $\frac{2}{3}$ **C**

13. $\frac{7}{12}$ **C**

14. $\frac{4}{10}$ **A**

15. $\frac{9}{18}$ **B**

16. $\frac{7}{20}$ **A**

17. $\frac{7}{14}$ **B**

18. $\frac{2}{4}$ **B**

19. $\frac{8}{16}$ **B**

20. $\frac{1}{3}$ **A**

21. $\frac{12}{24}$ **B**

22. $\frac{5}{14}$ **A**

23. $\frac{3}{6}$ **B**

24. $\frac{9}{20}$ **A**

25. Describe the patterns you see in the fractions in each category.

Possible answer: If the numerator is greater than $\frac{1}{2}$ of the

denominator, the fraction is greater than $\frac{1}{2}$. If the numerator

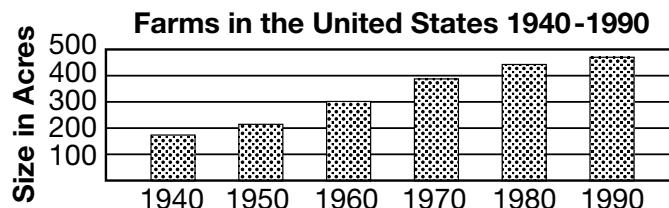
equals $\frac{1}{2}$ of the denominator, the fraction equals $\frac{1}{2}$. Otherwise,

the fraction is less than $\frac{1}{2}$.

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Critical Thinking

The graph shows changes in the size of the average farm from 1940 to 1990.



You want to buy a farm. Before you make a decision about which farm to buy, you decide to find out some facts about the size of farms.

1. Based on the graph, how has the average size of a farm changed from 1940 to 1990?

The size of an average farm has increased from 1940 to 1990.

2. About how much larger was an average farm in 1980 than an average farm in 1950?

Possible answer: The size of an average farm in 1980 is more than double the size of an average farm in 1950.

3. If you bought a farm that was double the size of an average farm in 1940, would your farm be as large as the average farm in 1990? Explain.

No. A farm that is double the size of a 1940 farm is about 350 acres while a 1990 farm is about 500 acres.

4. Suppose you buy a 400-acre farm.

- a. What year's average farm size is your farm closest to in size?

1970

- b. About what fractional part of your farm is represented by an average farm in 1960?

The average farm in 1960 is about $\frac{3}{4}$ as large as my farm.

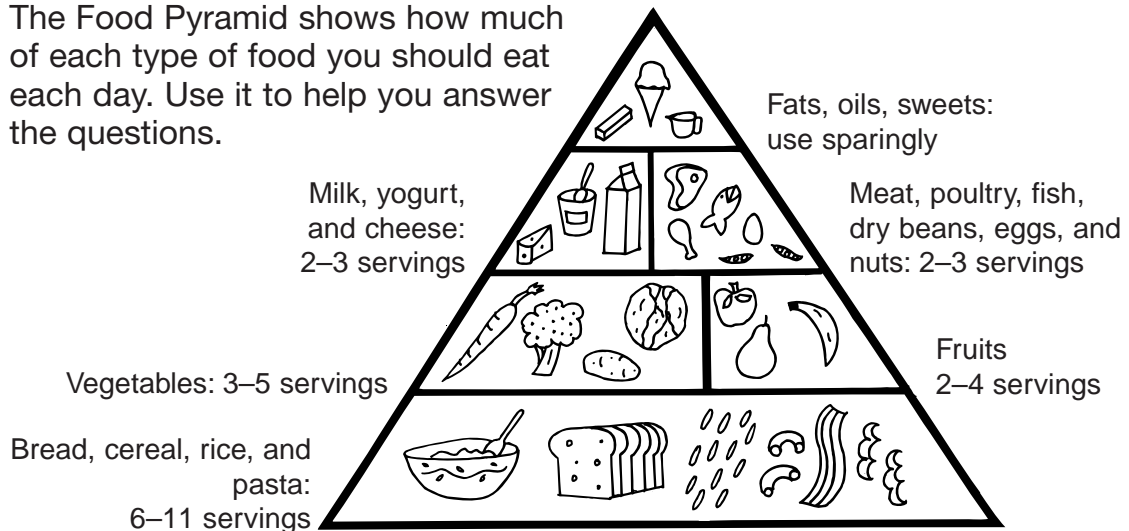
- c. Predict how the size of an average farm in the year 2000 will compare to the size of your farm. Give reasons for your prediction.

It is likely that my farm will be smaller than an average farm in 2000. This is because the chart shows farms getting larger.

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Critical Thinking

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1. Kari eats equal numbers of servings of bread, cereal, rice, and pasta, and she stays within the guidelines. How many servings of each does she have? 2 servings
2. For breakfast, Kari had one serving of cereal and 1 serving of fruit. What is the minimum amount of fruit she needs during the rest of the day?
1 serving The maximum? 3 servings
3. At lunch, Kari had one serving each of green beans, peas, and carrots. She likes vegetables and wants to eat the maximum recommended amount. How many servings can she have at dinner? 2 servings
4. Kari had one serving of milk with her breakfast cereal. She had milk and yogurt at lunch. Should she have cheese with dinner? Explain.

No, she's already had the maximum recommended amount.

5. Phil had an egg salad sandwich at lunch. With his egg salad sandwich, Phil had a salad and carrot sticks. Does he need to have another serving of vegetables for dinner? Explain.

Yes, the minimum servings per day is 3 and he has only had 2.