Focus

TEKS

Plan

Talk

October 20, 2014
TASM Professional Development Meeting
Grades 3-5

Love Kids. Love Math.
region 4

Side-by-Side
Project Share: http://bit.ly/1rAV4vx

K-6 Vertical Alignment
Project Share: http://bit.ly/1w9ms9c

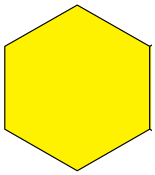
Handouts
Handouts: http://bit.ly/103JWSp

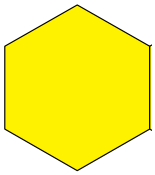
Understanding Fractions

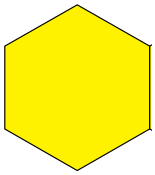
Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. 1(F) The student is expected to analyze mathematical relationships to connect and communicate mathematical ideas.

Acquire	Demonstrate

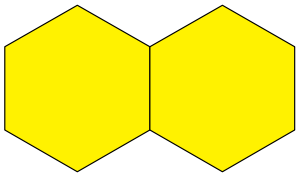
Hint Card: Use your pattern block pieces to complete the equation.

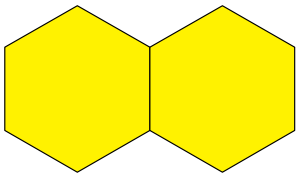
 = _____ triangles

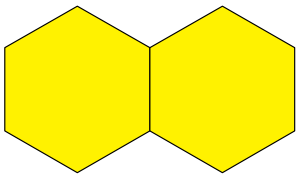
 = _____ rhombi

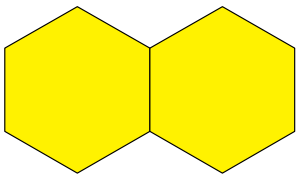
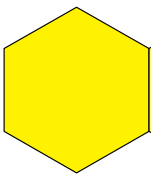
 = _____ trapezoids

Hint Card: Use your pattern block pieces to complete the equation.

 = _____ triangles

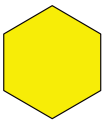
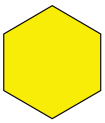
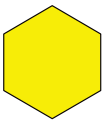
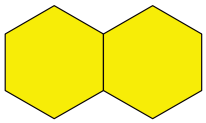
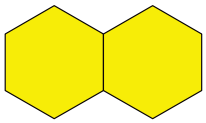
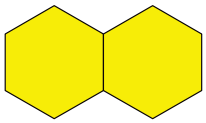
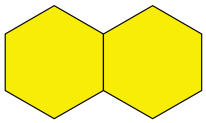
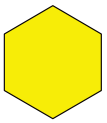
 = _____ rhombi

 = _____ trapezoids

 = _____ hexagons 

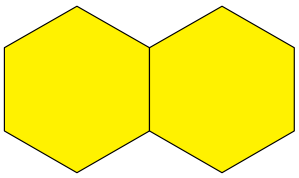
Pattern Block Relationships

Complete the "if, then" statement with the appropriate fraction.

If  = 1, then =
If  = 1, then =
If  = 1, then =
If  = 1, then =
If  = 1, then =
If  = 1, then =
If  = 1, then  =

Putting the Pieces Together

Two hexagons represent a whole.



1 Use pattern block pieces to represent the fraction $\frac{4}{6}$.

2 How many sixths are in $\frac{4}{6}$?

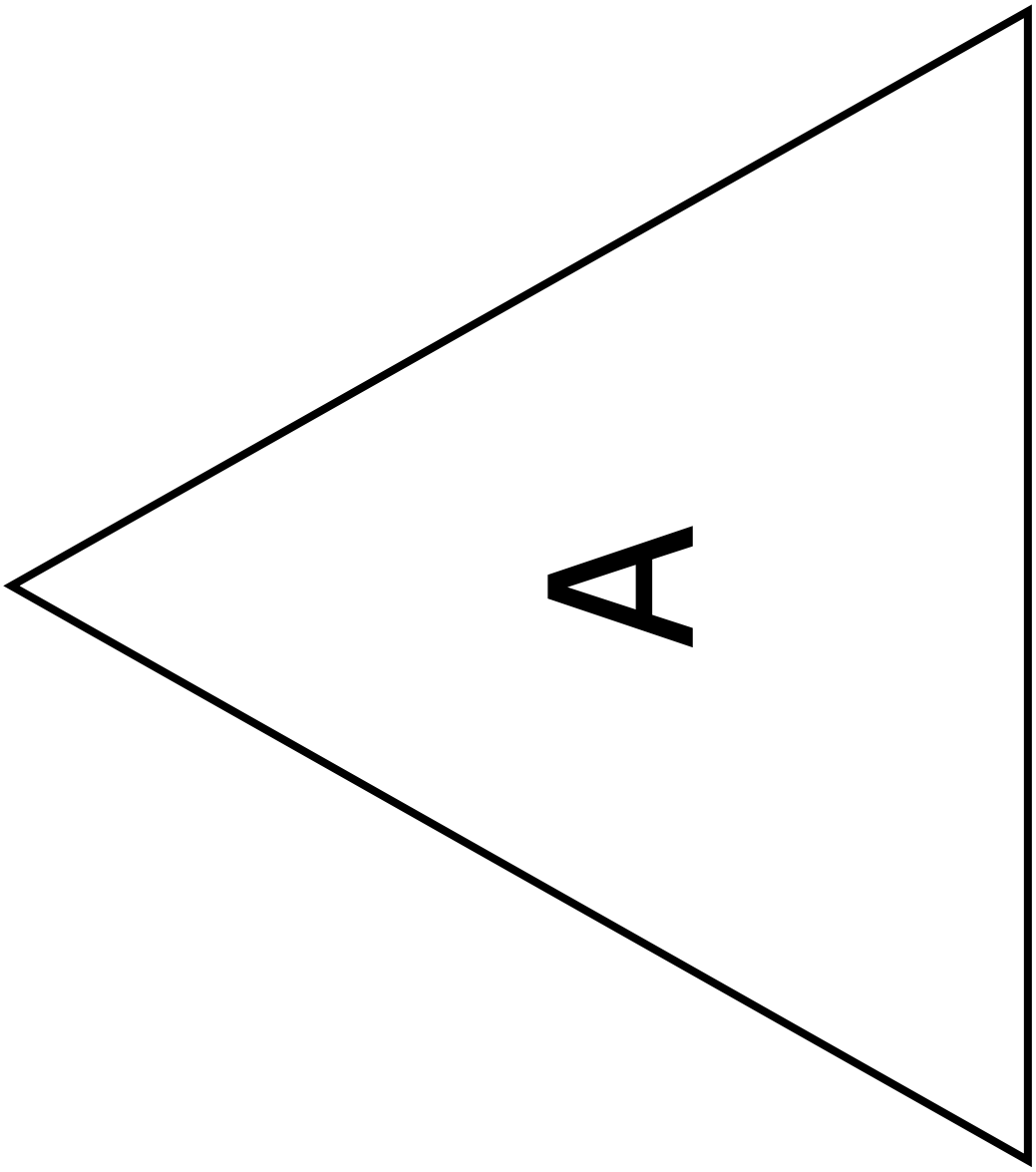
3 Write an addition equation to show that $\frac{4}{6}$ is equal to the sum of the sixths.

4 Use pattern block pieces to represent the fraction $1\frac{1}{4}$.

5 How many fourths are in $1\frac{1}{4}$?

6 Write an addition equation to show that $1\frac{1}{4}$ is equal to the sum of the fourths.

7 Write an addition equation to show $1\frac{1}{4}$ as the sum of three addends.


A

Triangles, Trapezoids, Hexagons, Rhombi, Oh My!!

1 Cover the area of triangle A with trapezoids.

A What fraction of triangle A is covered by 1 trapezoid?

B What fraction of triangle A is covered by 3 trapezoids?

C What fraction of triangle A is covered by 6 trapezoids?

2 Using what you know about the relationship between the trapezoid and hexagon, how many hexagons would it take to cover triangle A?

A What fraction of triangle A does 1 hexagon represent?

B What fraction of triangle A do 3 hexagons represent?

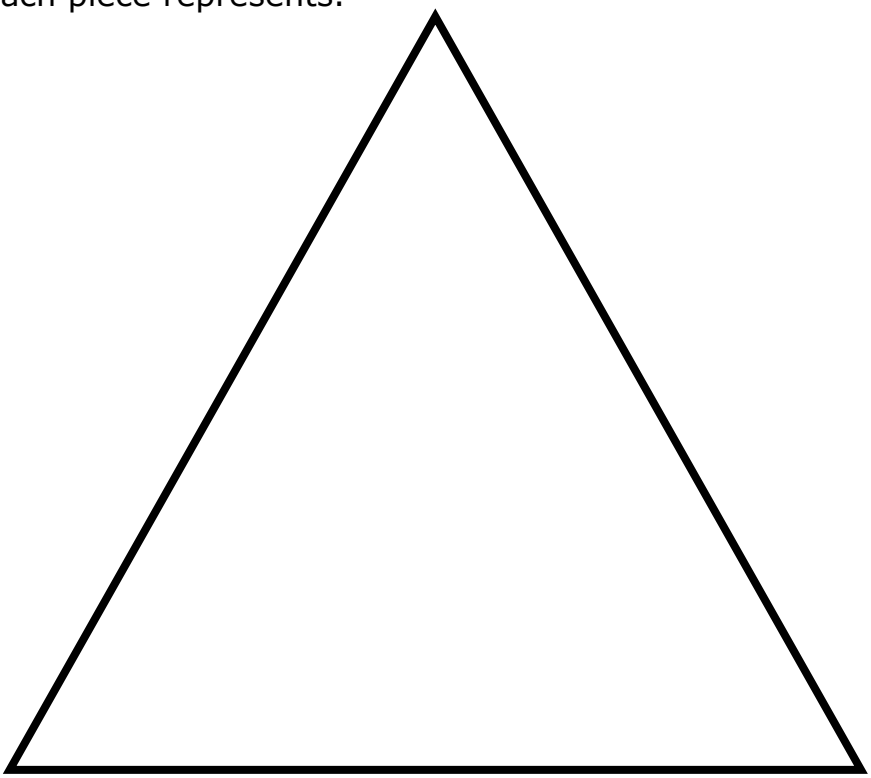
3 Using what you know about the relationship between the hexagon and triangle, how many triangles would it take to cover triangle A?

A What fraction of triangle A does 1 triangle represent?

B What fraction of triangle A do 12 triangles represent?

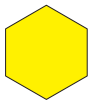
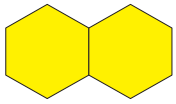
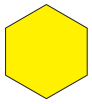
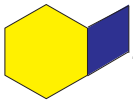
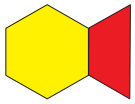
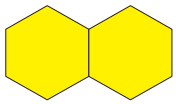
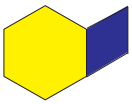
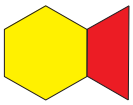
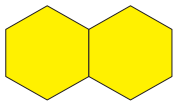
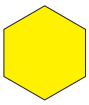
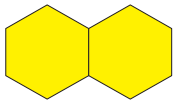
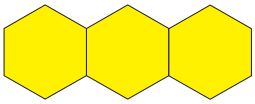
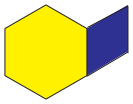
C What fraction of triangle A do 18 triangles represent?

4 Cover the entire area of triangle A using at least one hexagon, one trapezoid, one rhombus, and one triangle. Draw a model of your creation below. Write the fraction of triangle A that each piece represents.

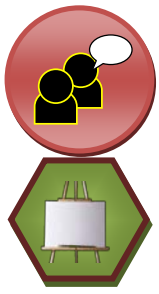


Pattern Block Fractions

Work with a partner to solve the following problems using the pattern blocks. Write the equation that matches each problem and record the answers in simplest form.

1	If  = 1 whole, then + =
2	If  = 1 whole, then + =
3	If  = 1 whole, then  +  =
4	If  = 1 whole, then  +  =
5	If  = 1 whole, then  – =
6	If  = 1 whole, then  –  =

Communicating about Mathematics
Model one of the problems on a number line. How does this model compare to the pattern block model above?



Tools and Strategies

Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. 1(C) The student is expected to select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.

Acquire	Demonstrate

Modeling with Open Number Lines

http://bit.ly/1w9nn9H

Problem	Open Number Line	Solution
1 Kasey runs 3 miles each day. If she ran 6 days last week, how many total miles did she run?		
2 Kyle runs 3 miles each day. If he ran a total of 18 miles last week, how many days did he run?		
3 Ms. Peterson is making skirts for the dance team. She needs a total of 127 yards of blue fabric and 69 yards of white fabric. How much fabric does she need to purchase to make the skirts?		
4 Sam is currently 42 inches. He wants to ride the Mean, Green, Screamin' Machine, but the sign says he must be 60 inches to ride. How many inches does Sam need to grow in order to ride the Mean, Green, Screamin' Machine?		

Compare your models and solutions with another group of three musketeers.

Modeling with Strip Diagrams

http://bit.ly/1phe8PJ

Problem	Strip Diagram	Solution
1 Joseph is having a party. He wants to give each of his friends 7 pieces of candy. If he invites 8 friends, how many pieces of candy must Joseph buy?		
2 Steve has 6 times as many toy cars as Carl. If Steve has 90 toy cars, how many toy cars does Carl have?		
3 Karen and Sierra are having a lemonade sale. They want to make 145 cups of lemonade. Currently, Karen has made 36 cups of lemonade and Sierra has made 45 cups of lemonade. How many more cups of lemonade do the girls need to make?		
4 Lu knows she needs $5.00 to buy her favorite ice cream sundae. If she has $3.50 already, how much more money does she need?		

Compare your models and solutions with another group of three musketeers.

Solving with Place Value and Properties of Operations

http://bit.ly/1w9nT7D

Problem	Strategy	Solution
1 A farmer is planting cherry trees on his farm. He will plant 5 rows of cherry trees each with 17 trees. How many cherry trees will the farmer plant?		
2 D'Andre is having a party. He wants to give each of his friends some candy. If he invites 8 friends to his party and has a total of 56 pieces of candy, how many pieces of candy will each friend receive?		
3 There are 188 second grade students and 195 third grade students at Jolly Elementary. How many students are in second grade and third grade at Jolly Elementary School?		
4 Pirate's Cove carwash washed 682 cars last week and 381 this week. How many more cars, did they wash last week than this week?		

Compare your models and solutions with another group of three musketeers.

Use an open number line, strip diagram, or a strategy involving place value or the properties of operations to solve the following problem.

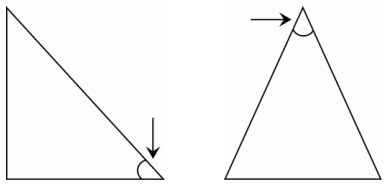
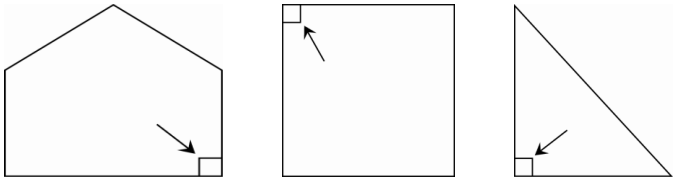
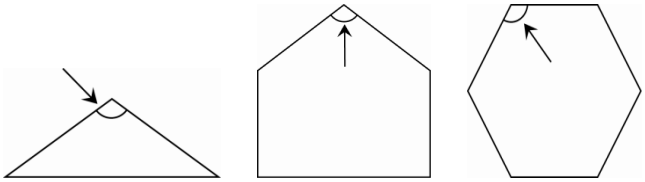
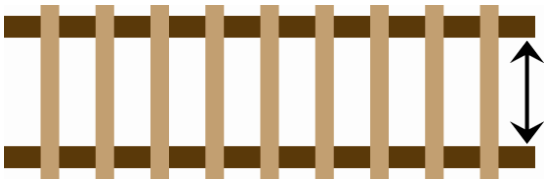
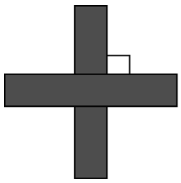
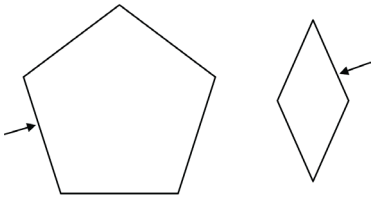
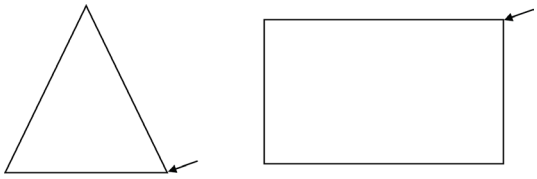
Juan has 376 baseball cards and Blake has 235 baseball cards. Sean has twice as many baseball cards as Juan and Blake. How many baseball cards does Sean have?

Understanding Geometry

Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. 1(G) The student is expected to display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Acquire	Demonstrate

Vocabulary Helper

acute angle an angle with measure smaller than 90 degrees	
right angle an angle with measure of 90 degrees	
obtuse angle an angle with measure larger than 90 degrees but less than 180 degrees	
Parallel lines in the same plane that do not intersect (equidistant at all points)	
Perpendicular lines that intersect to form a right angle (90 degrees)	
Sides any of the line segments that make up a polygon	
Vertex a point of intersection of rays or lines	

Sometimes, Always, Never Statements

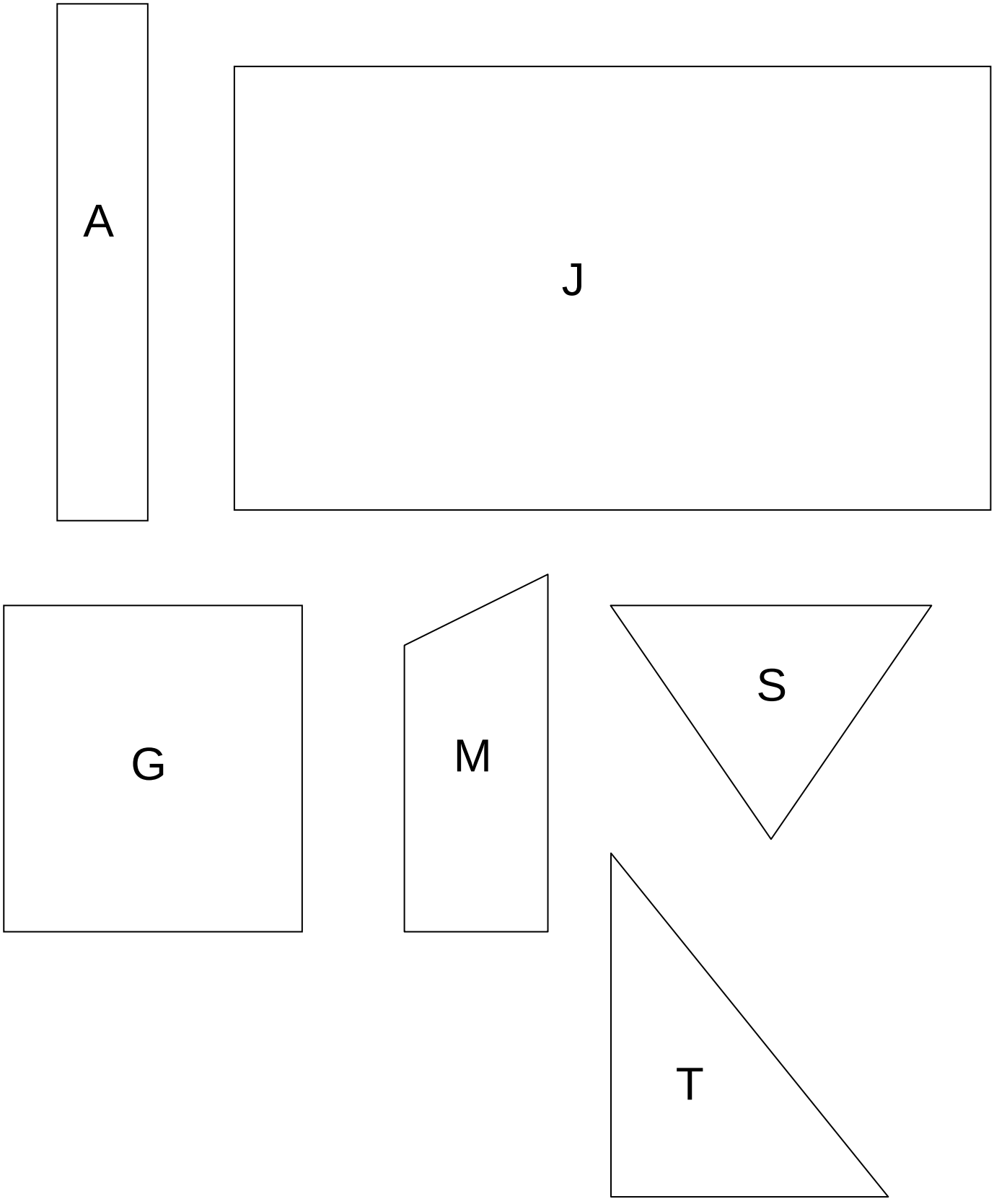
Directions: Place an "x" in the column with the appropriate word for each statement. If you chose ***sometimes***, try to think of an example that makes the statement true and an example that makes the statement false. Then, come up with a statement of your own.

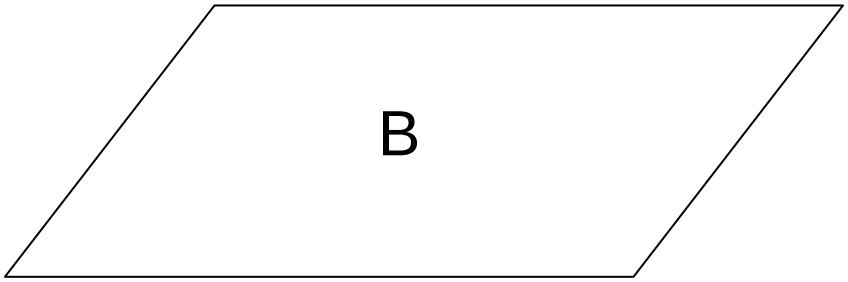
	Sometimes	Always	Never	True/False Examples
1. A square is _____ a rectangle.				
2. A rectangle is _____ a square.				
3. A triangle is _____ a rectangle.				
4. A circle is _____ a polygon.				
5.				

Quadrilateral Sorting Groups

Directions: Divide students into five groups. Give each group of students one of the cards with the list of shapes. Using the shapes from the informal shape sort, have students pull ONLY the shapes listed on their card. Students are to list similarities between all of the shapes listed. They are to create a list of properties that fits all shapes in on their cards.

Group 1 A, J, G, E, D, I
Group 2 M, L, N
Group 3 E, D, I
Group 4 E, D, I, H, C, K
Group 5 A, B, J, G, E, F, D, I, H, C, K


A
J
G
M
S
T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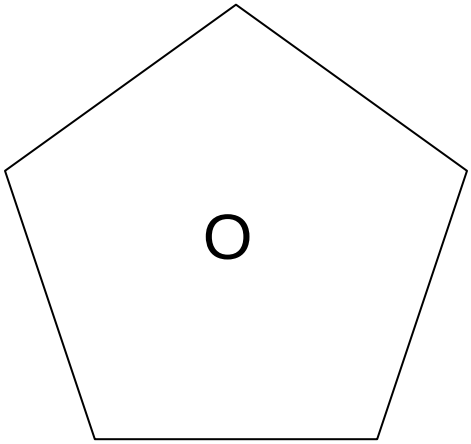
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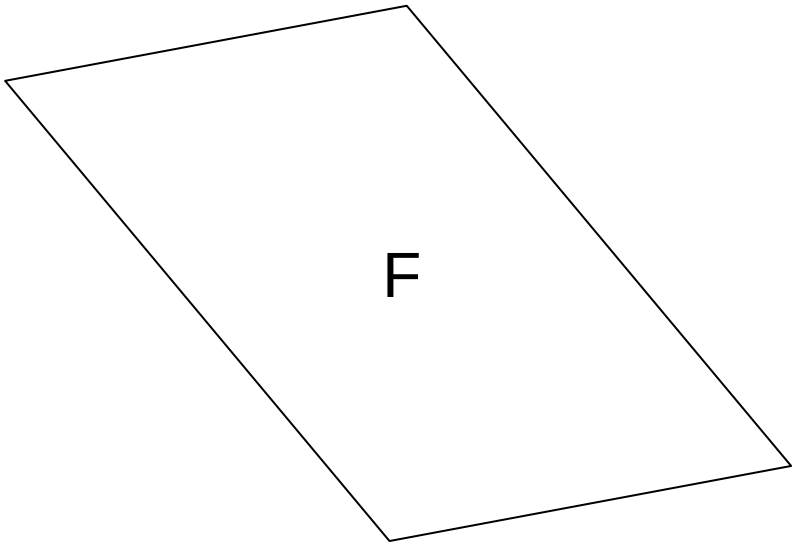
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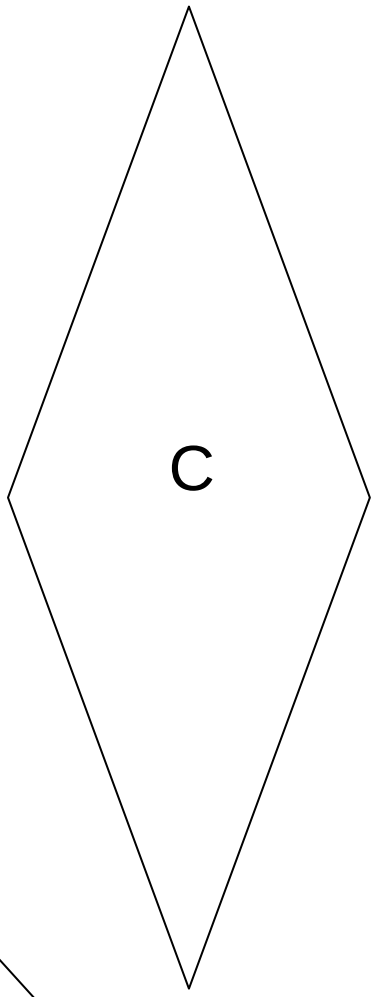
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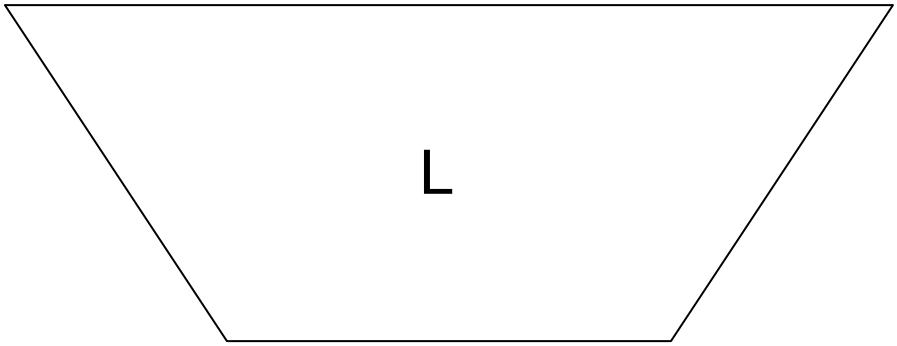
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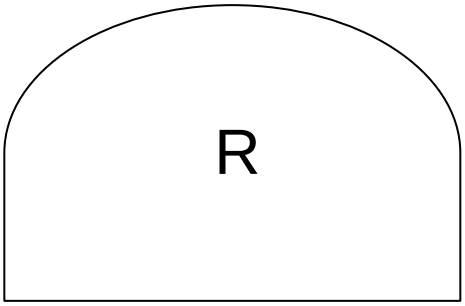
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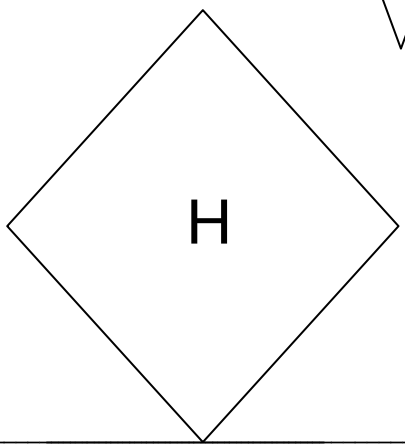
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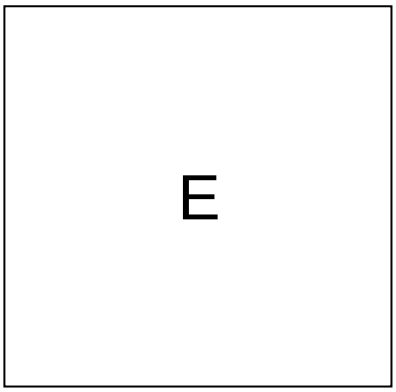
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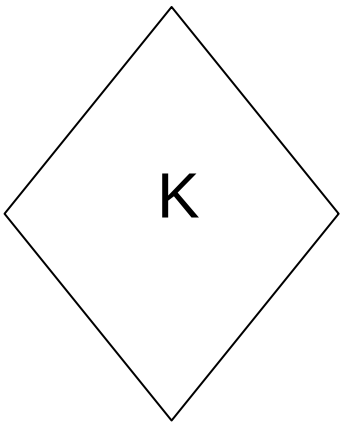
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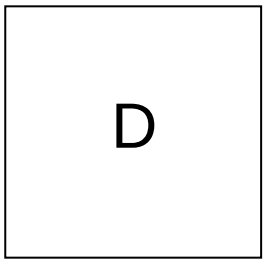
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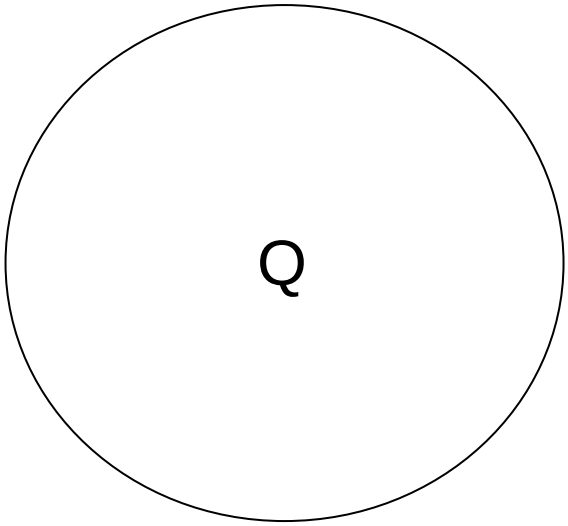
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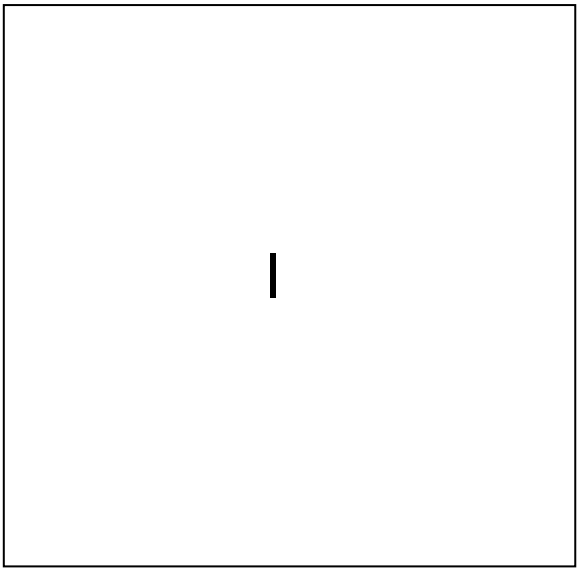
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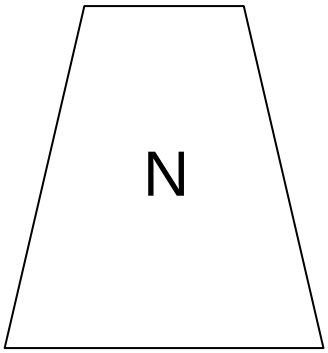
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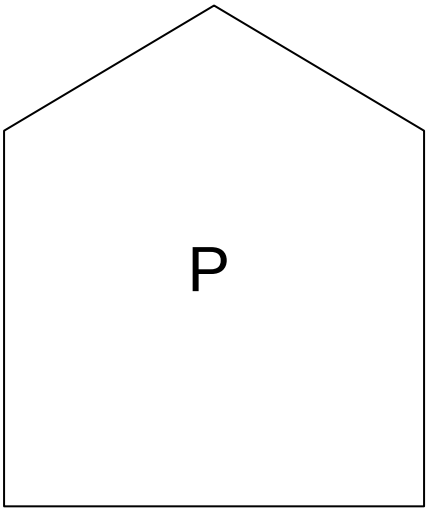
P

Definition (in your own words)	Facts/Characteristics
Examples	Non-Examples

Definition (in your own words)	Facts/Characteristics
Examples	Non-Examples

Understanding Data Analysis

Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. 1(E) The student is expected to create and use representations to organize, record, and communicate mathematical ideas.

Acquire	Demonstrate

Types of Graphs Phrase Bank:

- Every data point is listed including those that are repeated
- Best for organizing data sets
- Numerical data is represented
- Separates the place value of the digits

- Data may be categorical or numerical
- Frequencies are shown
- Dot may represent one count or more if noted

- Plots data as ordered pairs on a coordinate grid
- Shows the relationship between two sets of data
- Shows any correlation between two variables

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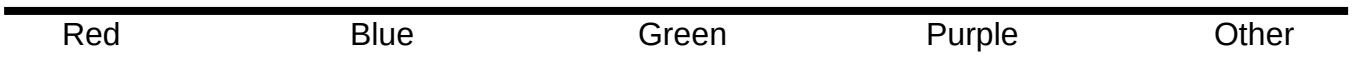
Dot Plot : What is your favorite color?



What questions could we ask regarding this dot plot?

Stem-and-Leaf Plot: Test Scores

Key

What questions could we ask regarding this stem-and-leaf plot?

Directions: Read the statements below and circle either True or False.

			Record your score for each question.
I drank a cup of coffee this morning.	True	False	
I am shorter than 64”.	True	False	
My commute to Austin was more than 150 miles.	True	False	
My shoe size is larger than a 7.	True	False	
My birthday is in December.	True	False	
My favorite subject in school as a child was math.	True	False	
A dog is a man’s best friend.	True	False	
I want the Texans to win tonight.	True	False	
I have been teaching for more than 120 months.	True	False	
I have a food allergy.	True	False	
		Total	

Directions: Read the statements below and circle either True or False.

			Record your score for each question.
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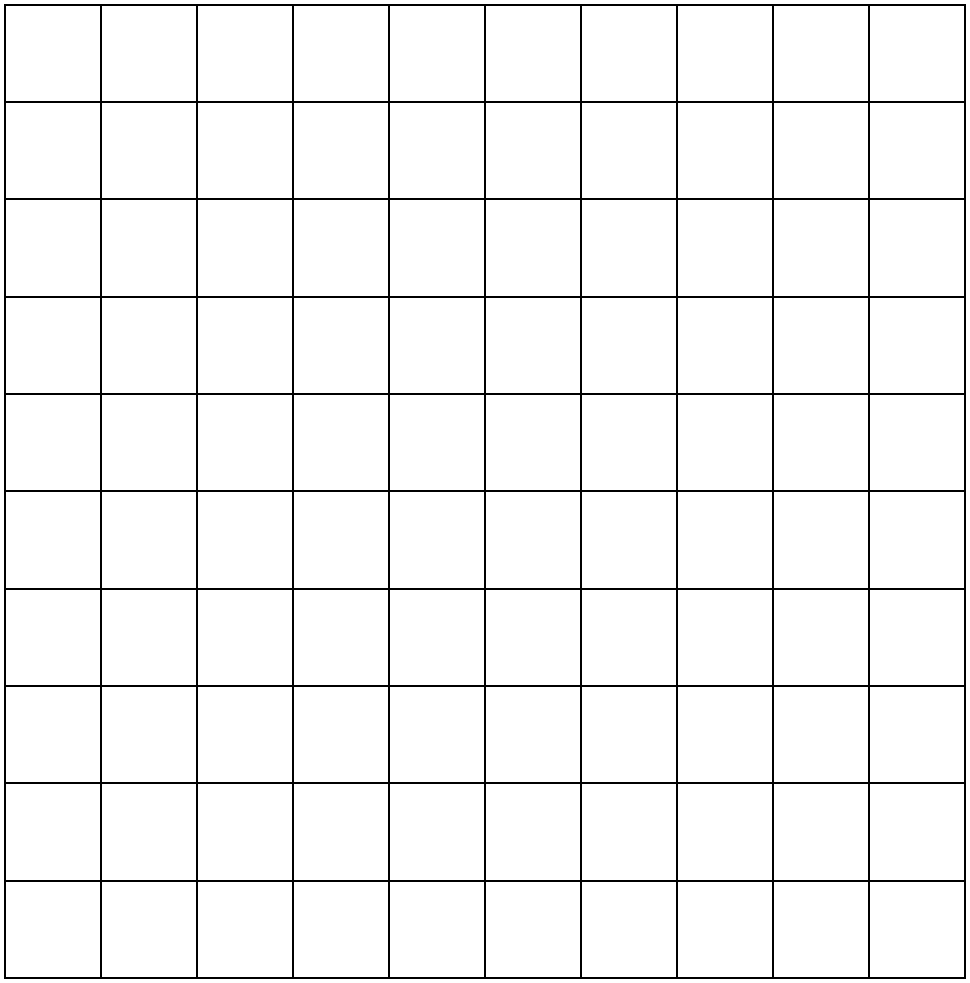
		Total	

Scatter Plot: Age vs. Height

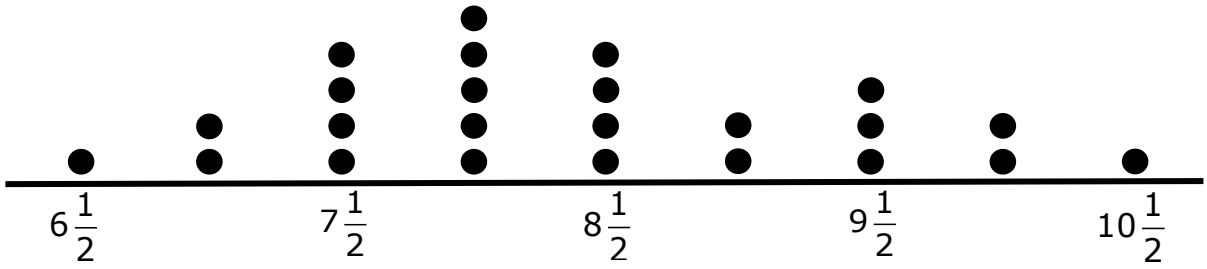


What questions could we ask regarding this scatter plot?

Class Shoe Size

Each student in Mr. Garcia's morning class and afternoon class recorded the length of his or her foot. The dot plot shows the foot lengths in the two classes.

Student Foot Length (Inches)



Key: ● =2 students

Statement	Circle One	Justify your answer.
1 Only one student's foot was $6\frac{1}{2}$ inches.	True False	
2 Eight students had a foot that is 9 inches or longer.	True False	
3 The number of students with feet that measured $7\frac{1}{2}$ inches is twice as many as the number of students with feet that measured 7 inches.	True False	
4 A new student joins Mr. Garcia's class. His foot measures $7\frac{1}{2}$ inches. • Using a colored pencil, add this data to the dot plot above. • Re-answer the questions using the same colored pencil.		

Communicating about Mathematics
Write a two-step problem that can be solved using the dot plot above.

_____
_____
_____
_____
_____
_____

Round Robin: Stem-and-Leaf Plot

The Smith family recorded the average rainfalls, in inches, for several different beach cities in both March and May.

March		May
	0	2, 4, 9
8	1	
9, 5, 2	2	2, 4, 7, 8
6, 2	3	1, 3
9, 6, 2	4	0, 3, 6, 8, 9
8, 7, 6, 6, 5	5	0
4	6	2

On the left side, 6 | 4 means 4.6 in. On the right side, 4 | 6 means 4.6 in.

Use the stem-and-leaf plot to answer the following questions.

1	How many cities have an average rainfall above 4 inches in March?	
2	How many cities have an average rainfall above 4 inches in May?	
3	What is the difference between the lowest rainfall in March and the lowest rainfall in May?	
4	What was the total amount of rainfall for the three cities with the highest amounts of rainfall in May?	

Communicating about Mathematics

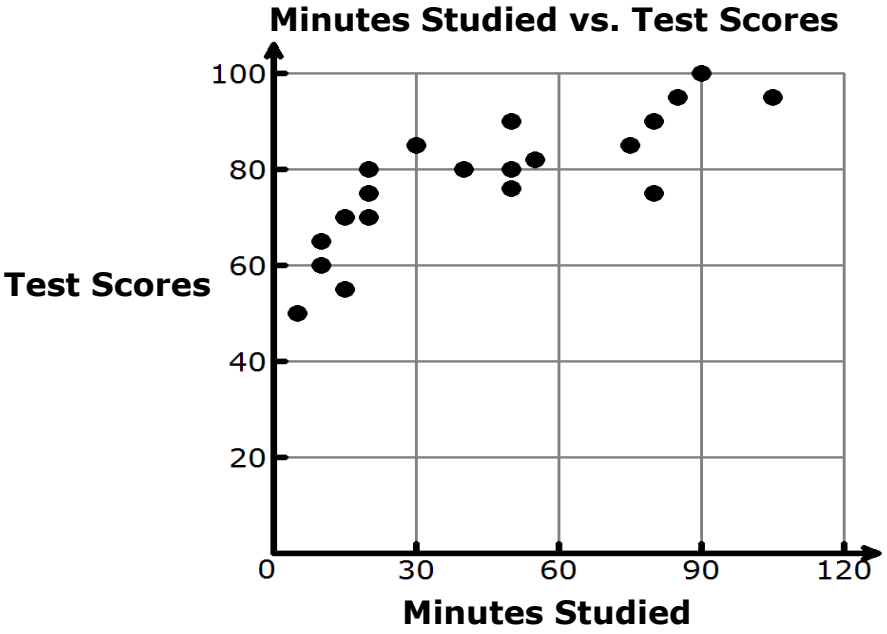
Using the stem-and-leaf plot, determine which month you would choose to go on vacation and explain why.

Student Name: _____ Date: _____

True or False: Analyzing Scatter Plots

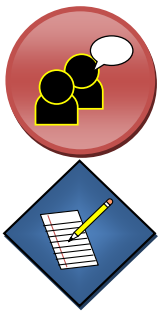
Below is the scatter plot Ms. Dartez created after her students took the last test. Each point on the scatter plot represents one student.

- Use the scatter plot below to determine if each statement on the **Scatter Plot Statement Cards** is true or false.
- Tape or glue each statement to the appropriate column below.



True	False

Communicating about Mathematics
Explain why 1 card is true. Explain why 1 card is false.



_____
_____
_____
_____
_____
_____

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Scatter Plot Statement Cards

Cut along the bold dotted lines. Five sets of cards are provided.

More than half the class scored below an 80% on the test.	The ordered pair (30, 85) means that a student who studied for thirty minutes scored an 85%.
If you study for 30 minutes or longer, you will most likely score above a 95%.	Approximately, three students scored greater than a 90%.

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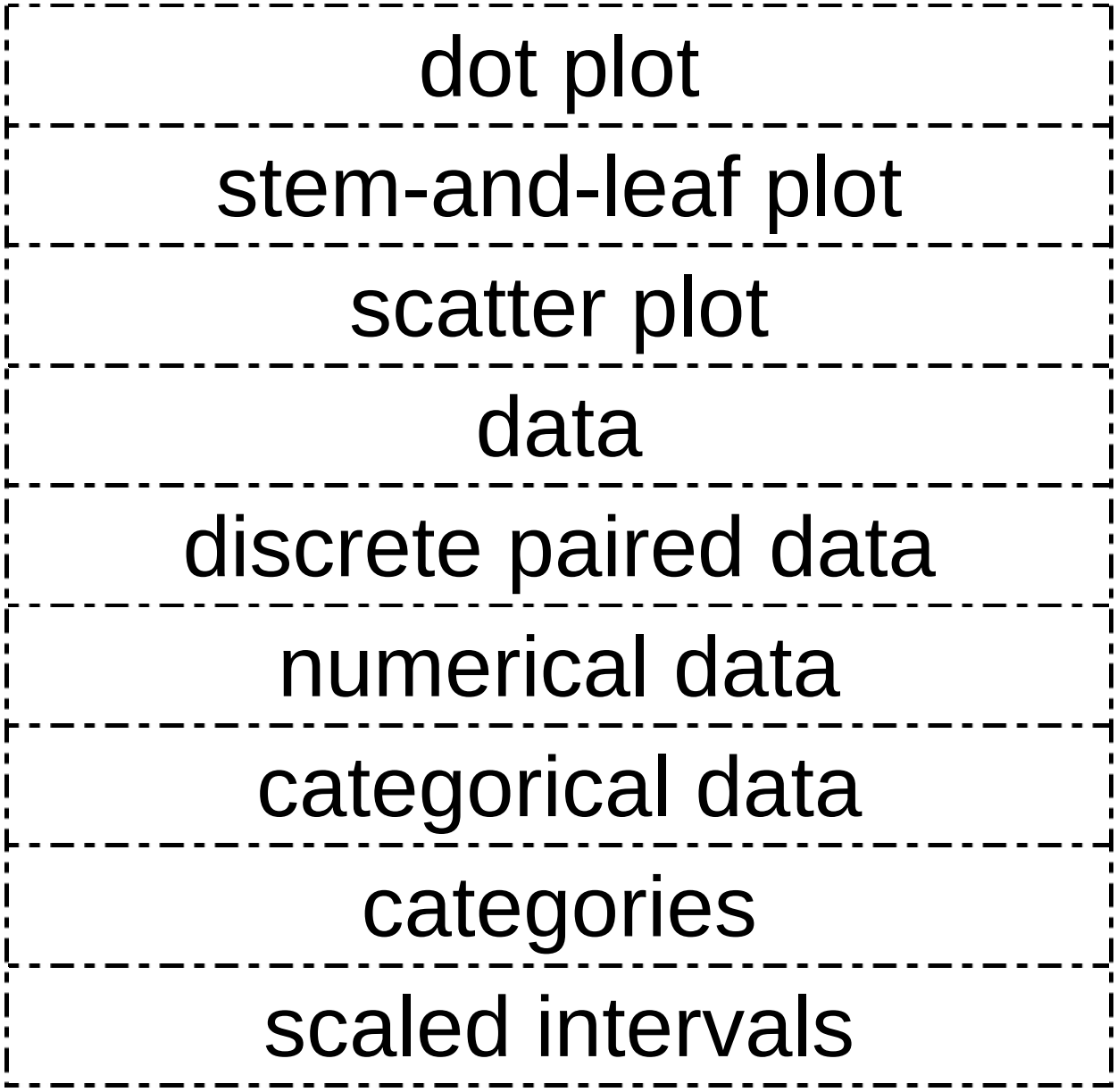
dot plot
stem-and-leaf plot
scatter plot
data
discrete paired data
numerical data
categorical data
categories
scaled intervals

Never stray from a dogged focus on classroom instruction.

Steve Leinwand

References

Chapin, S. H., & O'Connor, C. (2007). Academically productive talk: Supporting students' learning in mathematics. In G. W. Martin, & M. E. Strutchens (Eds.), *The learning of mathematics: Sixty-ninth yearbook* (pp. 113-128). Reston, VA: National Council of Teachers of Mathematics.

Leinwand, S. (2009). *Accessible mathematics: 10 instructional shifts that raise student achievement.* Portsmouth, NH: Heinemann.

Smith, M. S., & Stein, M. K. (2011). *5 practices for orchestrating productive mathematics discussions.* Reston, VA: National Council of Teachers of Mathematics.

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