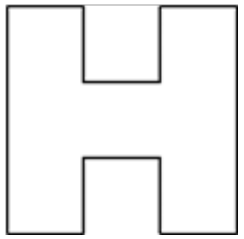
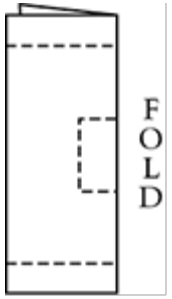
NAEP

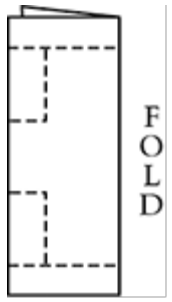
Grade 4 Mathematics Warm Ups

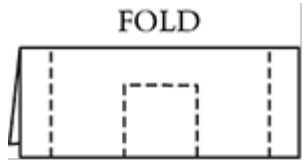
NAEP Grade 4 Math Warm Ups

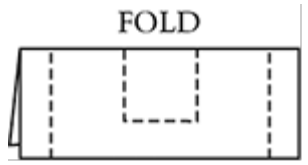


1. Which figure below, when cut on the dotted lines and unfolded, will look like the figure shown above?

A. 

B. 

C. 

D. 

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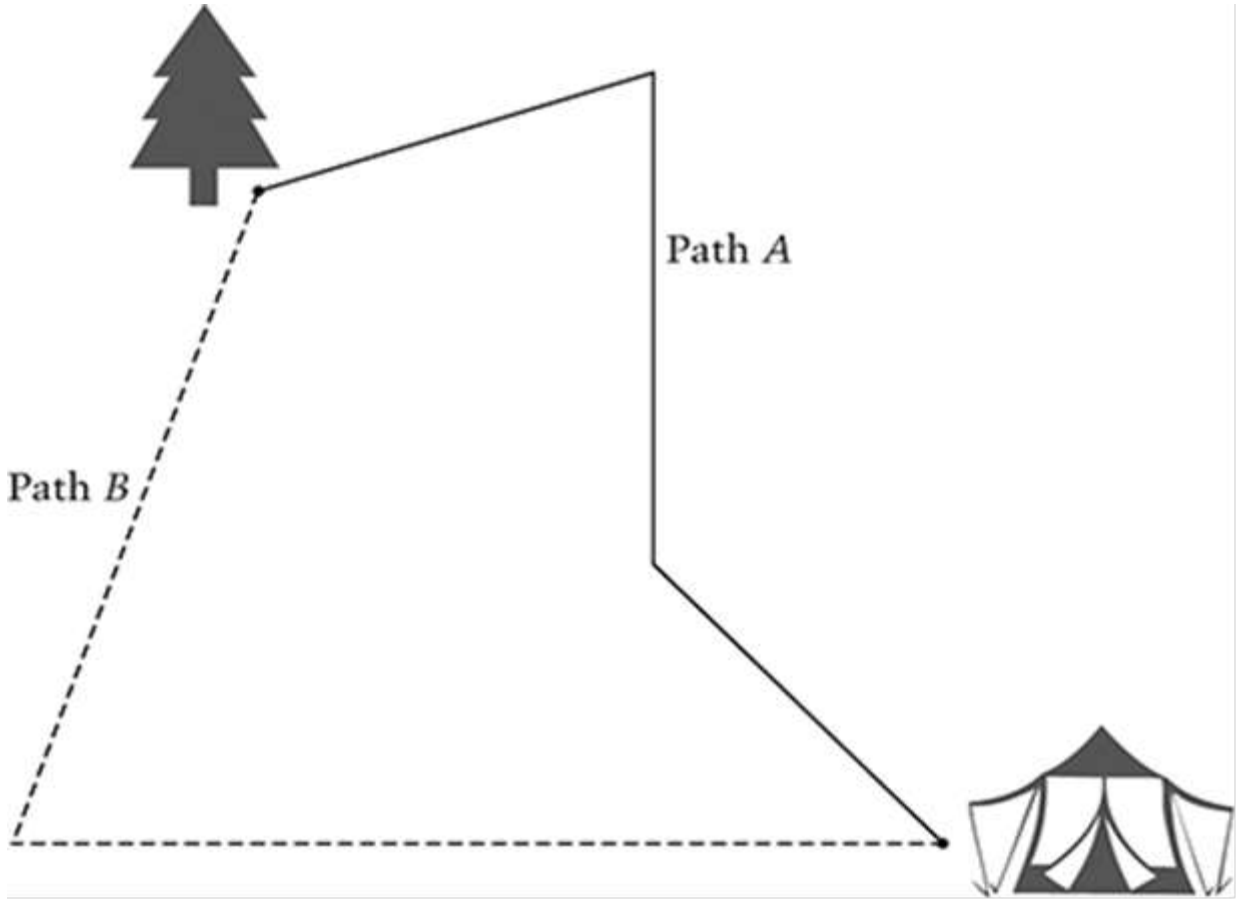

2. Which path from the tree to the tent is longer, path A or path B?

Answer: _____ How much longer? Answer: ____ centimeters

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3. Use inches for this question.

- Start at point A. Draw a line segment that is 7½ inches long.
- DRAW YOUR LINE SEGMENT IN THE BOX.

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π

HOW BUTTONS ARE SOLD

Type	Number of Buttons
Box of buttons	1,000 buttons
Package of buttons	100 buttons
Card of buttons	10 buttons
Single button	1 button

4. The art teacher bought buttons for a project. The teacher bought 1 box, 9 packages, 12 cards, and 5 single buttons.

   How many buttons did the teacher buy altogether?

   Answer: _____ buttons

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5. Use inches for this question.

On line segment AC, mark point B so that the distance from A to B is twice the distance from B to C.

A C

How long is segment AB?

Answer: _____ inches

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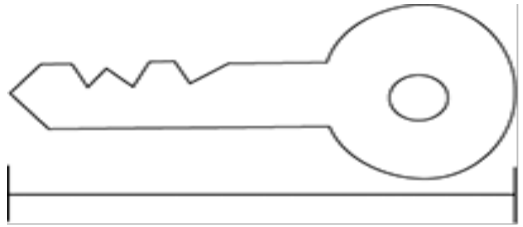
6. Use millimeters for this question.



What is the length of the key in millimeters (mm)?

A. 5 mm

B. 8 mm

C. 50 mm

D. 53 mm

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Louisa walked for 15 minutes from her house to Mary's house. She spent 25 minutes at Mary's house. She walked 10 minutes to the store. She bought groceries at the store. She walked 10 more minutes to get home.

7. What one additional piece of information is needed to find how many minutes Louisa was gone from her house?

A. What time Louisa left home

B. How fast Louisa walked

C. How far Louisa lives from Mary

D. How long Louisa was at the store

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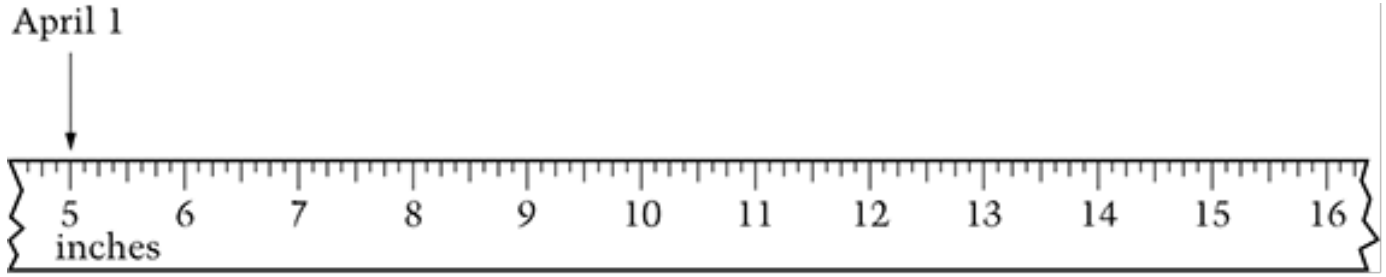
8. On April 1, Larry's puppy was 5 inches high. Larry measured the height of his puppy three more times during the year.

May 1: 6½ inches

August 1: 10 inches

December 1: 15¼ inches

On the picture of a ruler below, mark the three measurements and label the dates of the three measurements.



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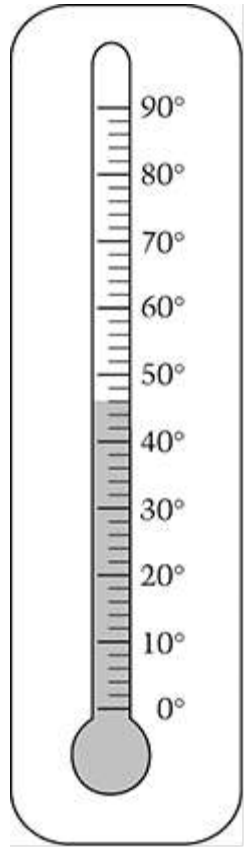
9. What temperature does the thermometer show?



A. 43°
B. 46°
C. 52°
D. 54°

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10. Al, Bev, and Carmen are going on a ride at the park. Only 2 people can go on the ride at a time. They can pair up 3 different ways, as shown below.

› Al and Bev

› Al and Carmen

› Bev and Carmen

Derek decides to join the group. How many different ways can the 4 students pair up?

Answer: _____

Show your work or explain how you got your answer.

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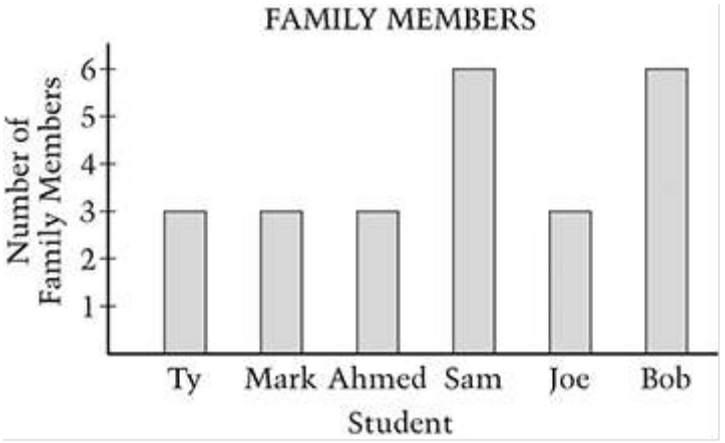
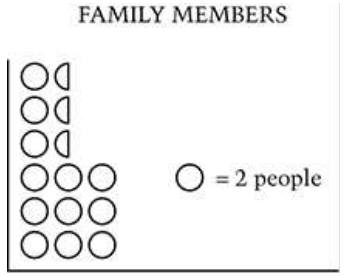


11. The graph above shows the number of family members for six students. Which graph below is the best summary of the data?

A.



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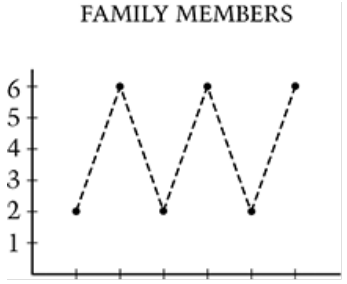

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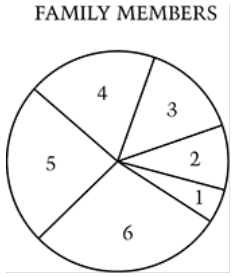
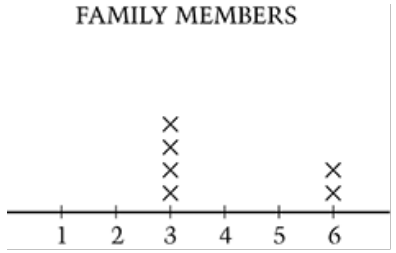


D.



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12. If the pattern shown below continues, what is the first fraction in the pattern that will be <u>greater</u> than 1?

$$\frac{1}{20}, \frac{4}{20}, \frac{7}{20}, \frac{10}{20}, \frac{13}{20}, \ldots$$

A. $\frac{20}{20}$

B. $\frac{21}{20}$

C. $\frac{22}{20}$

D. $\frac{25}{20}$

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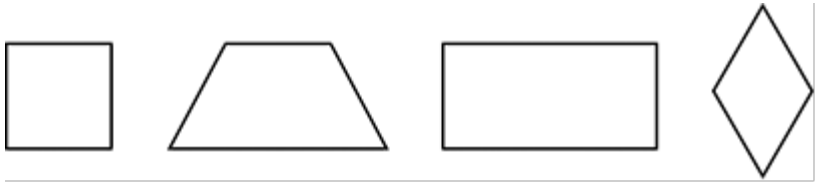

13. Which statement is true about all four shapes shown?

A. Each shape is a rectangle.
B. Each shape is a quadrilateral.
C. Each shape has two pairs of parallel sides.
D. Each shape has one or more right angles.

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14. Elsa works at the library.

She puts a total of 54 books onto 3 shelves.

Elsa puts at least 16 books on each shelf.

Complete the table to show one way Elsa could put the books on the shelves.

Shelf	Number of Books
1	
2	
3	
Total	54

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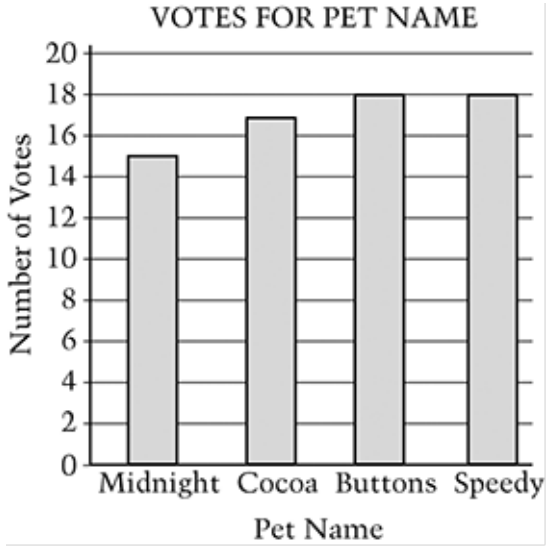
The fourth graders voted for a name for their pet. The graph shows the results of the vote.



15. The students voted a second time. For the second vote, 4 students changed their vote from Buttons to Midnight. All other students voted for the same name they voted for the first time. Which name had the most votes the second time?

A. Midnight
B. Cocoa
C. Buttons
D. Speedy

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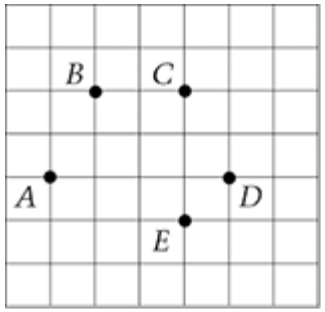
16. Pablo connected points, with straight lines, in the following order:

A to B → B to C → C to D → D to A



What shape did he make?

A. Hexagon
B. Pentagon
C. Rectangle
D. Trapezoid

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17. Andy has three cards, A, B, and C. Each card has one number on it.

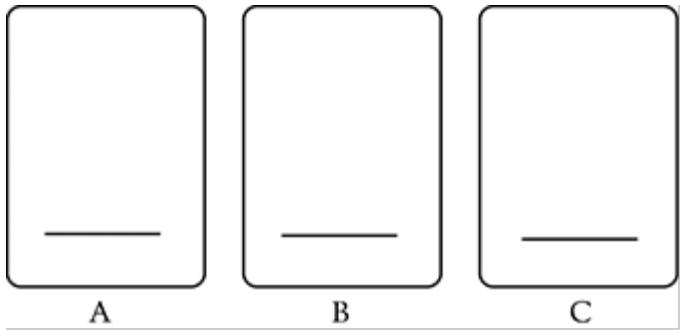
› One card has the number 4 on it.

› One card has the number 6 on it.

› One card has the number 10 on it.

The number on card B is a factor of 8, and the number on card C is a factor of 12.

Write the correct number on each of the cards below so that they are the same as Andy's cards.



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18. There are 22 students in a class. There are 12 girls in the class.

What is the ratio of the number of boys to the number of girls in the class?

A. 10 to 12

B. 10 to 22

C. 12 to 10

D. 22 to 12

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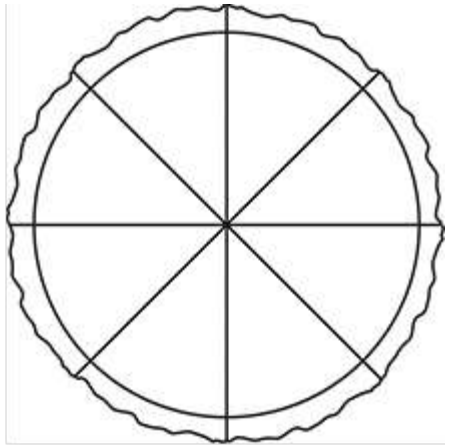
Nick has a whole pizza.



19. Nick says he will eat ½ of the pizza. He says he will give $\frac{3}{8}$ of the pizza to Sam and $\frac{3}{8}$ of the pizza to Joe.

Can Nick do what he says? Yes or No

Explain or show why or why not.

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20. The table shows the length and the width of the gym floors in four schools. Each floor is in the shape of a rectangle.

School	Length of Floor	Width of Floor
Adams	95 ft	40 ft
Brooks	90 ft	55 ft
Carter	100 ft	50 ft
Dunbar	85 ft	60 ft

Which schools gym floor has the greatest area?

A. Adams

B. Brooks

C. Carter

D. Dunbar

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A yellow box holds 72 pencils.

› Y is the same as 72.

Two red boxes hold as many pencils as 1 yellow box.

› R R is the same as Y.

Three blue boxes hold as many pencils as 1 red box.

› B B B is the same as R.

21. How many pencils does 1 blue box hold?

Show or explain how you got your answer.

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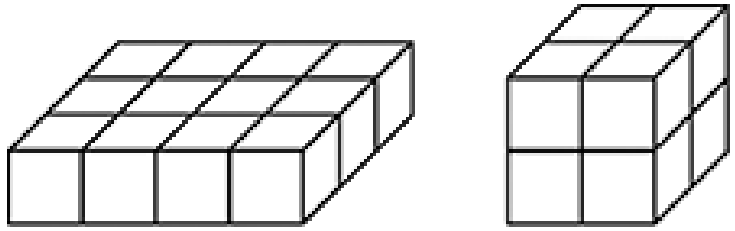

Solid *A*

Solid *B*

22. How many more small cubes were used to make Solid A than Solid B?

A. 2

B. 4

C. 6

D. 7

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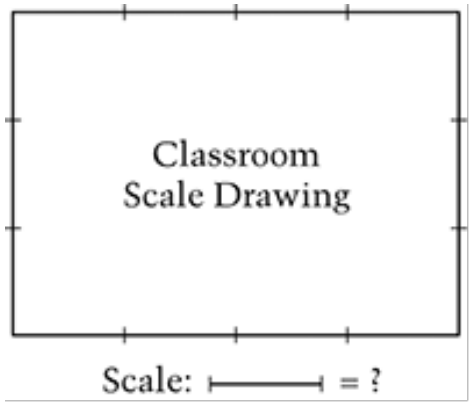

23. The picture shows Jackie's scale drawing of her classroom. Which scale did she use?

A. ⊢——⊣ = 1 inch

B. ⊢——⊣ = 10 feet

C. ⊢——⊣ = 100 feet

D. ⊢——⊣ = 1 mile

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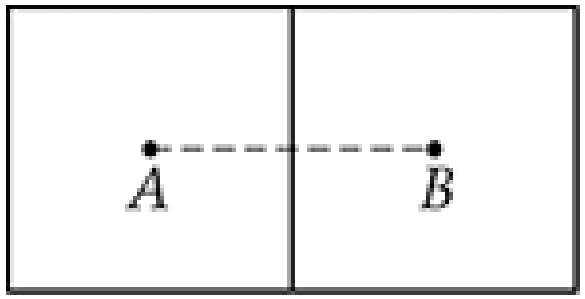

24. Each square above is 10 units on a side. Points A and B are the centers of the squares. What is the distance between A and B?

A. 5 units

B. 10 units

C. 15 units

D. 20 units

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FAVORITE ICE-CREAM FLAVORS OF FOURTH GRADERS

Class	Number Who Chose Vanilla	Number Who Chose Chocolate
Mr. Kennedy	6	12
Ms. Ying	8	10
Mrs. Delgado	7	13
Mrs. Findley	9	15

25. The table lists the favorite ice-cream flavors of four classes of fourth graders. On the graph below, use one ☺ to represent 10 children. Draw the correct number of faces on the graph to show the favorite flavors of the fourth graders.

FAVORITE ICE-CREAM FLAVORS

Number Who Chose Vanilla	
Number Who Chose Chocolate	

☺ = 10 children

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26. Every 30 minutes Dr. Kim recorded the number of bacteria in a test tube.

Time	Number of Bacteria
1:00 P.M.	600
1:30 P.M.	1,190
2:00 P.M.	2,390
2:30 P.M.	4,800

Which best describes what happened to the number of bacteria every 30 minutes?

A. The number of bacteria increased by 500.

B. The number of bacteria increased by 1,000.

C. The number of bacteria doubled.

D. The number of bacteria tripled.

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MOVIE TIMES	
Early Show	3:15
Late Show	7:30

27. The early show and the late show for a movie last the same amount of time. The early show begins at 3:15 P.M. and ends at 4:27 P.M. The late show begins at 7:30 P.M. At what time does the late show end?

Show your work.

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28. Which unit would be best to measure the amount of liquid in a spoonful of lemon juice?

A. Milliliters
B. Liters
C. Millimeters
D. Meters

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4 quarts = 1 gallon

29. Amy wants to put 8 gallons of water into her aquarium. She has a 2-quart pitcher to carry water from the sink. How many times will she need to fill her pitcher?

A. 4
B. 10
C. 16
D. 32

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30. An amusement park has games, rides, and shows.

› The total number of games, rides, and shows is 70.
› There are 34 rides.
› There are two times as many games as shows.

How many games are there? _____
How many shows are there? _____
Use numbers, words, or drawings to show how you got your answer.

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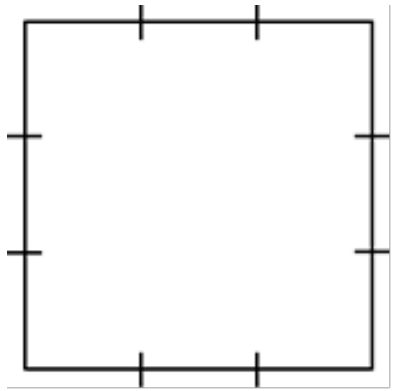
The square has a perimeter of 12 units.



31. What is the area of the square?

A. 6 square units

B. 8 square units

C. 9 square units

D. 12 square units

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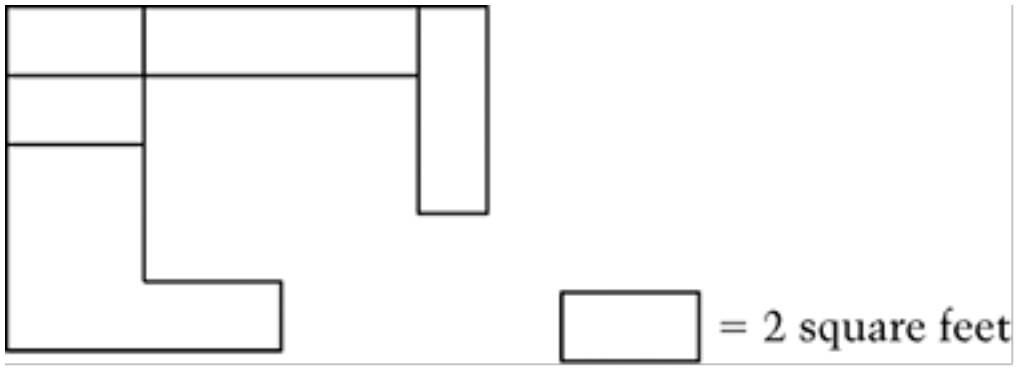

32. Which is the best estimate for the area of the figure?

A. Less than 10 square feet
B. More than 10 square feet but less than 15 square feet
C. More than 15 square feet but less than 25 square feet
D. More than 25 square feet

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Mr. Jones picked a number greater than 100.

› He told Gloria to divide the number by 18.

› He told Edward to divide the number by 15.

33. Whose answer is greater?

Gloria's or Edward's

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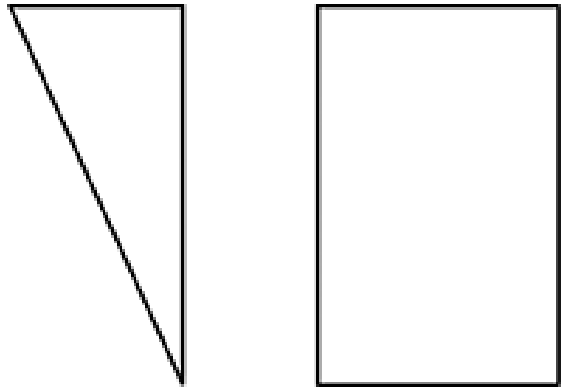

34. How are the right triangle and the rectangle alike?

A. Each figure has at least one right angle.
B. Each figure has parallel sides.
C. Each figure has at least one line of symmetry.
D. Each figure has at least two sides that are the same length.

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Sam folds a piece of paper in half once. There are 2 sections.

Sam folds the paper in half again. There are 4 sections.

Sam folds the paper in half again. There are 8 sections.

Sam folds the paper in half two more times.

35. Which list shows the number of sections there are each time Sam folds the paper?

A. 2, 4, 8, 10, 12
B. 2, 4, 8, 12, 24
C. 2, 4, 8, 16, 24
D. 2, 4, 8, 16, 32

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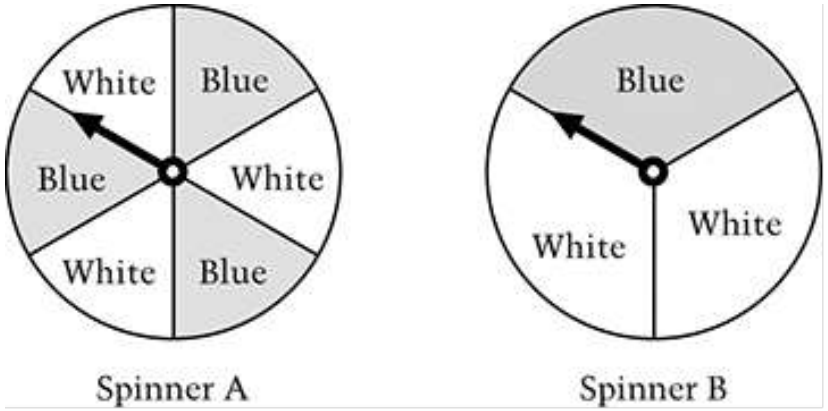
36. Lori has a choice of two spinners. She wants the one that gives her a greater probability of landing on blue.



Which spinner should she choose?

- Spinner A
- Spinner B

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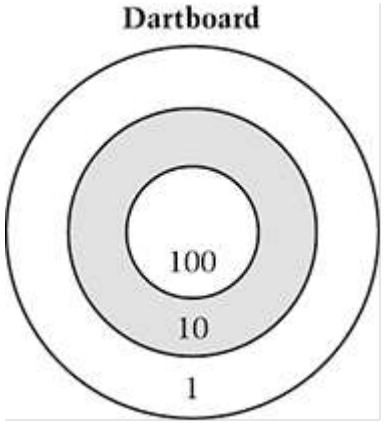

37. A dartboard has three separate areas.
Darts that land in the inner circle earn 100 points each.
Darts that land in the middle ring earn 10 points each.
Darts that land in the outer ring earn 1 point each.

Jill three 9 darts.
Each X marks a spot where one of Jill's darts landed.
What was Jill's score?
Answer: _____ points
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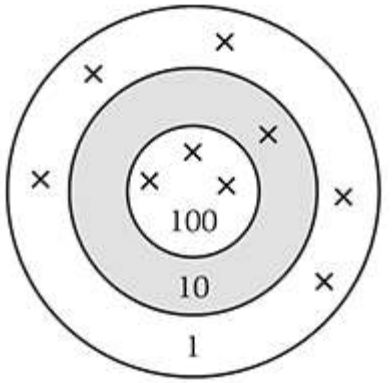

Jill's Turn

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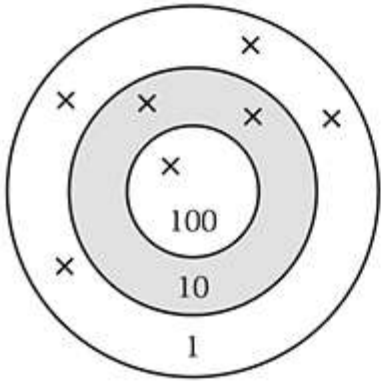
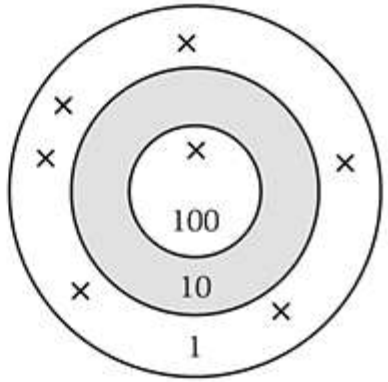
Kevin threw 7 darts, and they landed as shown
He has 2 more darts to throw.



Kevin's Turn

Ruth threw 7 darts, and they landed as shown.
She has 2 more darts to throw.



Ruth's Turn

The person who has the highest score after throwing 9 darts wins.

Can Jill win the game? Yes or No

Can Kevin win the game? Yes or No

Can Ruth win the game? Yes or No

Explain how you know which players can win and which players cannot win.

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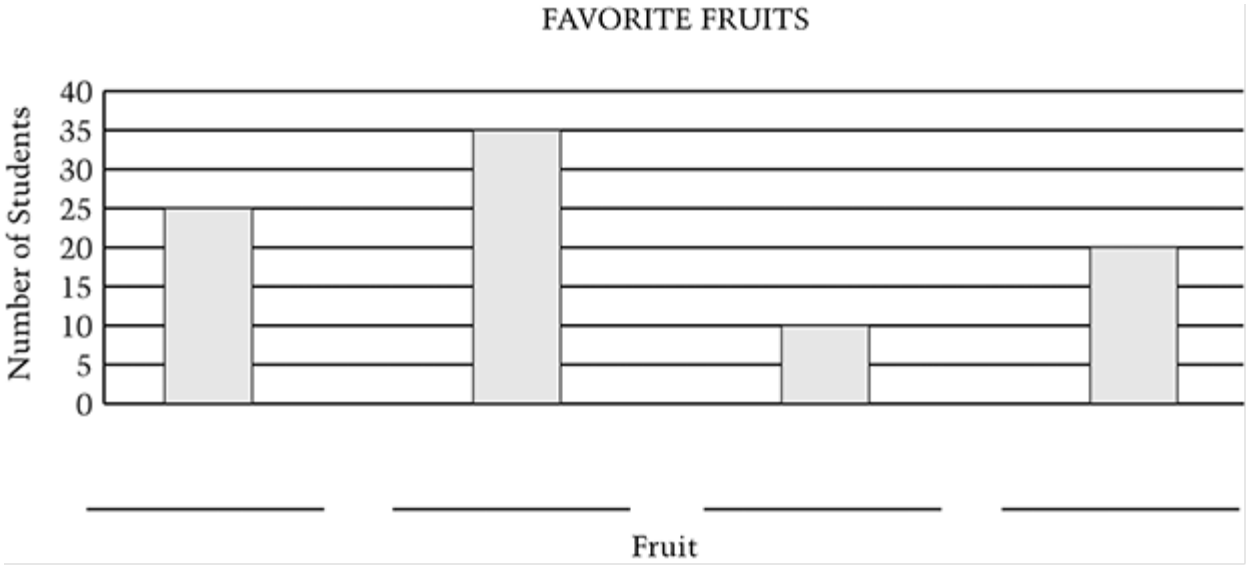
38. The graph below shows students' favorite fruits.

Use these clues to label the bars with the correct fruit.

› Twice as many students chose apples as grapes.

› Five more students chose peaches than apples.

› Ten more students chose bananas than peaches.



Write the correct fruit on the lines above.

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39. The three digits above can be used to make 6 different 3-digit numbers.

If one of the 3-digit numbers is picked at random, what are the chances that it will be an odd number?

A. Impossible
B. Possible but not very likely
C. Very likely but not certain
D. Certain

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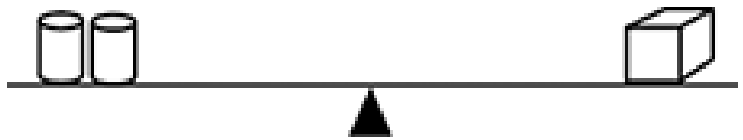

40. On the scale above, 2 cylinders balance 1 cube. Which of the scales below would balance?

A. 

B. 

C. 

D. 

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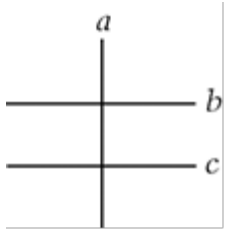
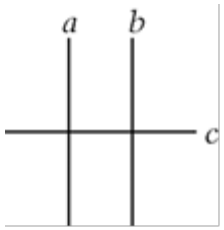
› Lines a and b are parallel to each other.

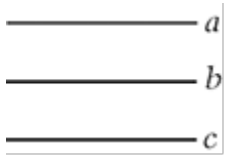
› Line c is perpendicular to these lines.

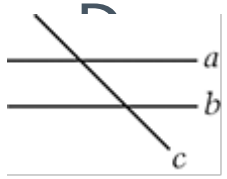
› Jan correctly draws lines a, b, and c.

41. Which of these could be Jan's drawing?

A. 

C. 

B. 



NAEP Grade 4 Math Warm Ups

42. A student had to multiply 328 x 41. The student's answer was 5,598.

Use estimation to explain why this answer is not reasonable.

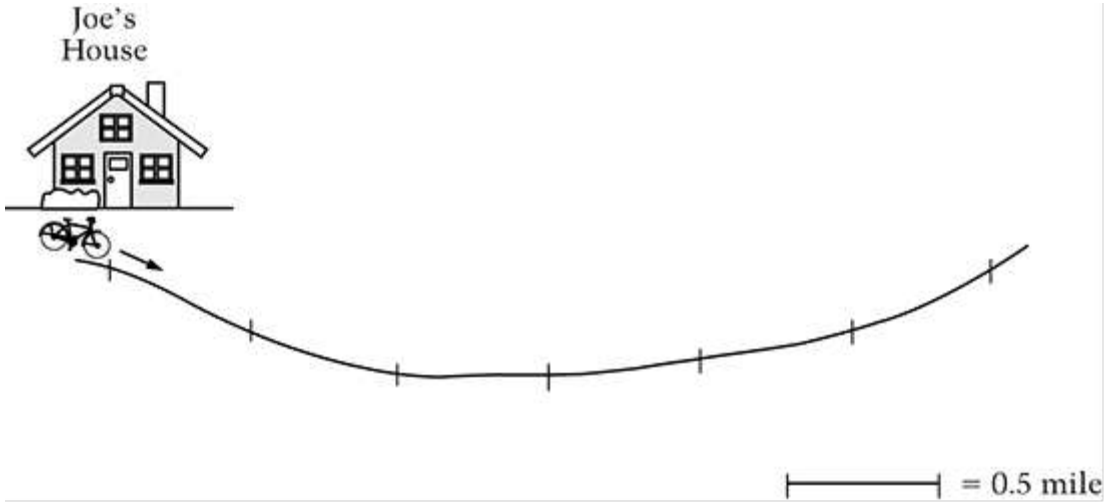
NAEP Grade 4 Math Warm Ups

43. Joe rode his bicycle from his house to his friend's house.

› He rode 1.7 miles along the path below.

› The path is marked every 0.5 mile.

Put an X on the path to show how far Joe rode to his friend's house.



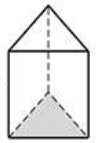
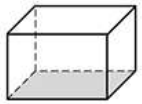
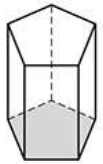
NAEP Grade 4 Math Warm Ups

44. Ms. Kim has 45 stickers that she wants to give out to 6 students. The students are sitting in a circle. Ms. Kim gives out one sticker at a time and keeps going around the circle until all the stickers are gone. How many of the students will get more than 7 stickers?

A. 2
B. 3
C. 5
D. 6

NAEP Grade 4 Math Warm Ups

45. The table shows the number of edges for each prism.

Shape	Number of Edges
Triangular Prism 	9
Rectangular Prism 	12
Pentagonal Prism 	15

What is the number of edges for a prism if the bottom face has 7 sides?

A. 18

B. 20

C. 21

D. 22

NAEP Grade 4 Math Warm Ups

46. Marty has 6 red pencils, 4 green pencils, and 5 blue pencils. If he picks out one pencil without looking, what is the probability that the pencil he picks will be green?

A. 1 out of 3

B. 1 out of 4

C. 1 out of 15

D. 4 out of 15

NAEP Grade 4 Math Warm Ups

47. Write the next two numbers in the number pattern.

1 6 4 9 7 12 10 ___ ___

Write the rule that you used to find the two numbers your wrote.

NAEP Grade 4 Math Warm Ups

48. A turkey is put in the oven at 10:30 a.m. If the turkey takes 2 ¾ hours to cook, at what time should it be taken out of the oven?

A. 12:15 p.m.
B. 12:45 p.m.
C. 1:15 p.m.
D. 1:45 p.m.

NAEP Grade 4 Math Warm Ups

π

49. Sam did the following problems.

2 + 1 = 3

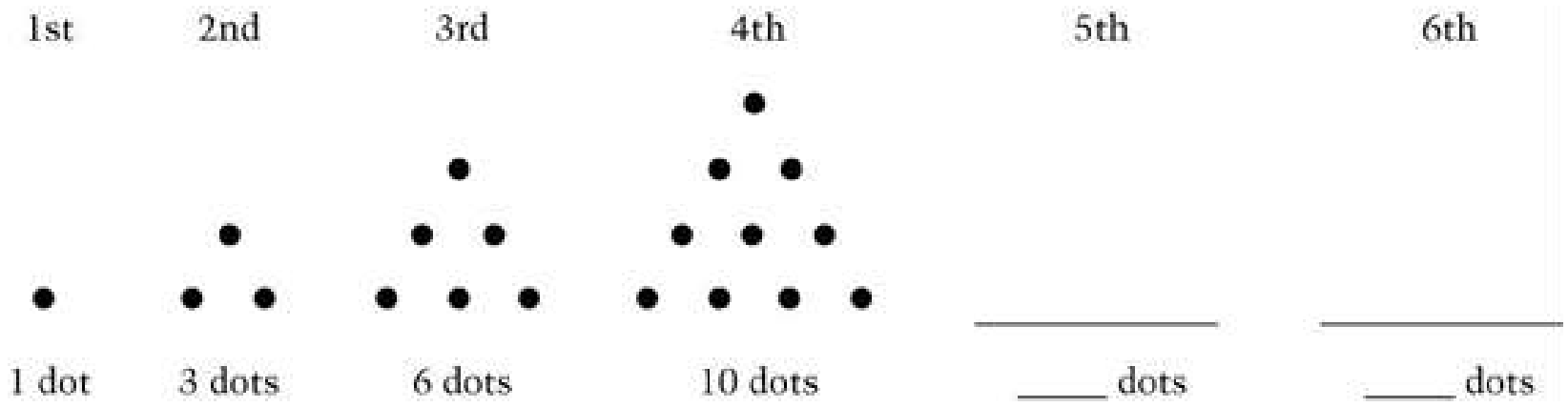
6 + 1 = 7

Sam concluded that when he adds 1 to any whole number, his answer will always be odd.

Is Sam correct? Yes or No

Explain your answer.

NAEP Grade 4 Math Warm Ups



50. A pattern of dots is shown above. How many dots would be in the 6 picture?

Answer: _____

Explain how you found your answer.

NAEP Grade 4 Math Warm Ups

51. Emily needs to measure the length of a table. She has a dollar bill that is about 6 inches long. It fits, end to end, 10 times along the length of the table. Which is the best estimate for the length of the table?

A. 5 feet

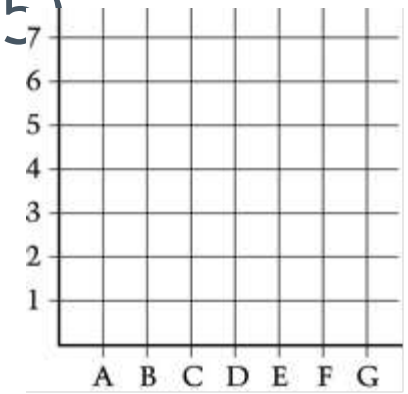
B. 6 feet

C. 10 feet

D. 12 feet

NAEP Grade 4 Math Warm Ups

52. On the grid below, plot the points that have coordinates (B,1), (B, 3), and (D, 5)



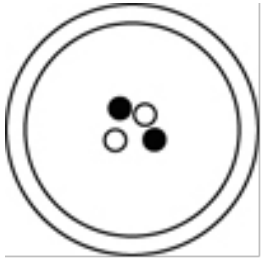
Plot 3 more points on the grid so that when you connect all 6 points you will make a rectangle.

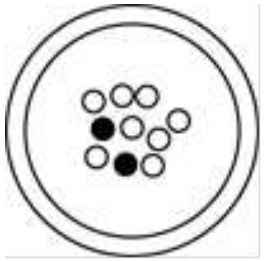
List the coordinates for the 3 new points. ____ ____ ____

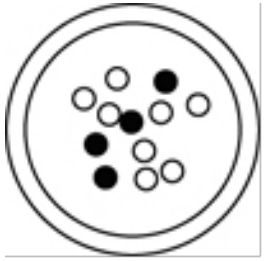
Connect the 6 points to show your rectangle.

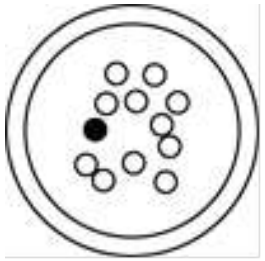
NAEP Grade 4 Math Warm Ups

53. A person is going to pick one marble without looking. For which dish is there the greatest probability of picking a black marble?

A. 

B. 

C. 



NAEP Grade 4 Math Warm Ups

54. The clock shows the time that Bill leaves his house in the morning. He returns 6 hours and 25 minutes later. At what time does he return?

A. 5:15 A.M.

B. 5:40 A.M.

C. 5:15 P.M.

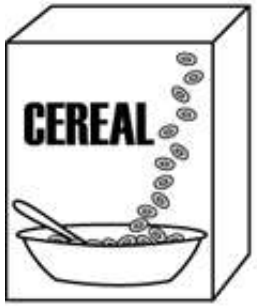
D. 5:40 P.M.

NAEP Grade 4 Math Warm Ups

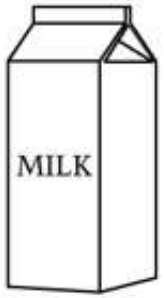
55. Carlos bought the cereal and milk shown. Use the table to find out the total amount Carlos spent, including tax.

Total amount spent: _____

Show how you found your answer.



$4.95



$2.45

SALES TAX TABLE

Amount of Sales	Amount of Tax
$6.00	$0.36
6.20	0.37
6.40	0.38
6.60	0.40
6.80	0.41
7.00	0.42
7.20	0.43
7.40	0.44
7.60	0.46
7.80	0.47
8.00	0.48

NAEP Grade 4 Math Warm Ups

In	Out
2	5
3	7
4	9
5	11
15	31
38	

56. The table shows how the "In" numbers are related to the "Out" numbers. When 38 goes in, what number comes out?

A. 41
B. 51
C. 54
D. 77

NAEP Grade 4 Math Warm Ups

57. Mark's room is 12 feet wide and 15 feet long. Mark wants to cover the floor with carpet. How many square feet of carpet does he need?

Answer: _____ square feet

The carpet costs $2.60 per square foot. How much will the carpet cost?

Answer: $_____

NAEP Grade 4 Math Warm Ups

57. There will be 58 people at a breakfast and each person will eat 2 eggs. There are 12 eggs in each carton. How many cartons of eggs will be needed for the breakfast?

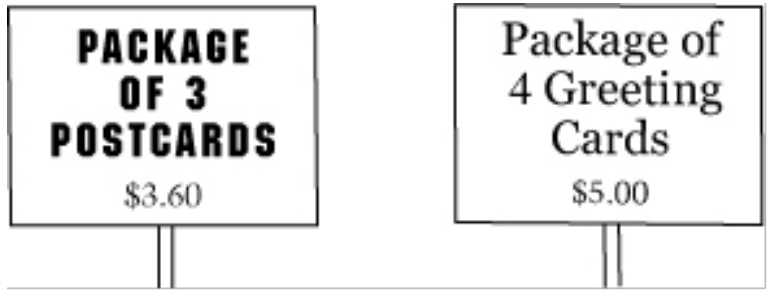
A. 9

B. 10

C. 72

D. 116

NAEP Grade 4 Math Warm Ups



59. Rico bought 10 cards, which cost $12.20 before tax. How many packages of each type did he buy?

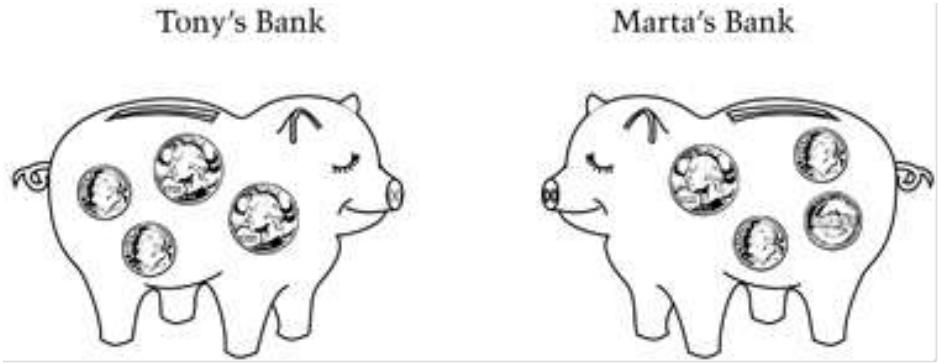
_____ Packages of postcards

_____ Packages of greeting cards

Explain how you know your answer is correct.

Rico said that one postcard is cheaper than one greeting car. Show that Rico is correct.

NAEP Grade 4 Math Warm Ups



60. Tony has 2 quarters and 2 dimes. Marta has 1 quarter, 2 dimes, and 1 nickel. Which of the coins from Tony's bank would he need to give Marta so that they each have the same amount of money?

A. One dime
B. Two dimes
C. One quarter
D. One quarter and one dime

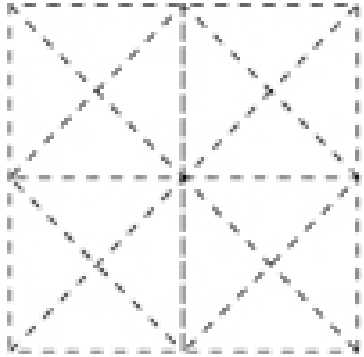
NAEP Grade 4 Math Warm Ups

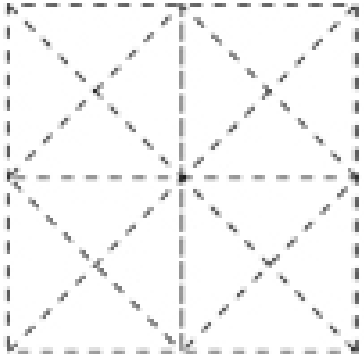
61. Which of these units would be the best to use to measure the length of a school building?

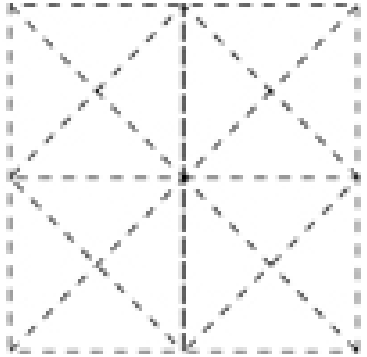
A. Millimeters
B. Centimeters
C. Meters
D. Kilometers

NAEP Grade 4 Math Warm Ups

62. In each figure below, outline a square. The square must <u>not</u> be the same size.

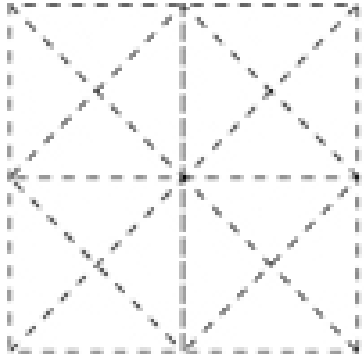


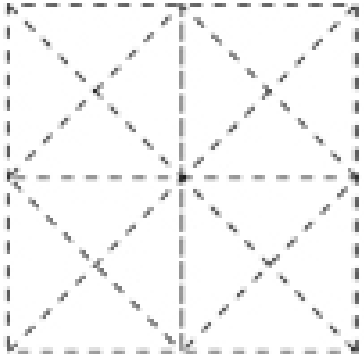


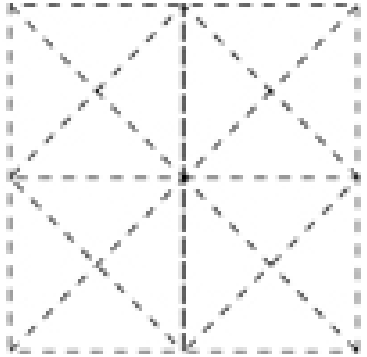


NAEP Grade 4 Math Warm Ups

63. In each figure below, outline a triangle. The triangle must <u>not</u> be the same size.

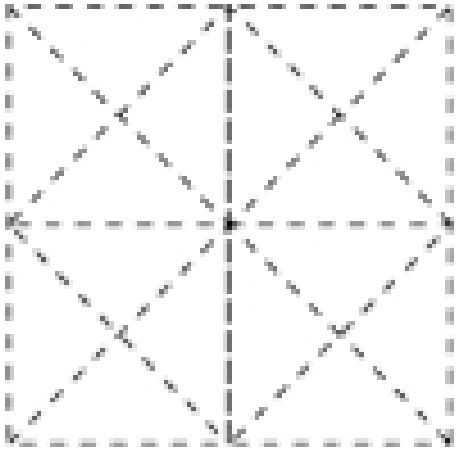






NAEP Grade 4 Math Warm Ups

64. In the figure below, outline a four-sided shape that is <u>not</u> a rectangle (or a square).



NAEP Grade 4 Math Warm Ups

65. Five classes are going on a bus trip and each class has 21 students. If each bus holds only 40 students, how many buses are needed for the trip?

Answer: _____

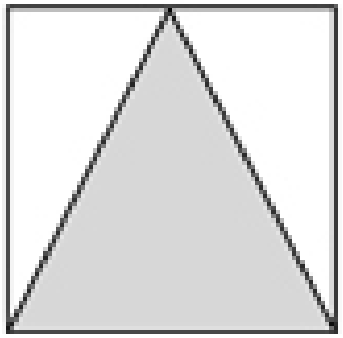
NAEP Grade 4 Math Warm Ups

66. Mark says $\frac{1}{4}$ of his candy bar is smaller than $\frac{1}{5}$ of the candy bar.

Is Mark right? Yes or No

Draw a picture or use words to explain why you think Mark is right or wrong.

NAEP Grade 4 Math Warm Ups



67. If the area of the shaded triangle is 4 square inches, what is the area of the entire square?

A. 2 square inches

B. 4 square inches

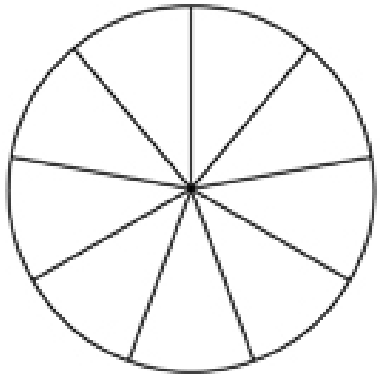
C. 8 square inches

D. 16 square inches

NAEP Grade 4 Math Warm Ups

68. Luis wants to make a game spinner in which the chance of landing on blue will be twice the chance of landing on red. He is going to label each section either red (R) or blue (B).

Show how he could label his spinner.



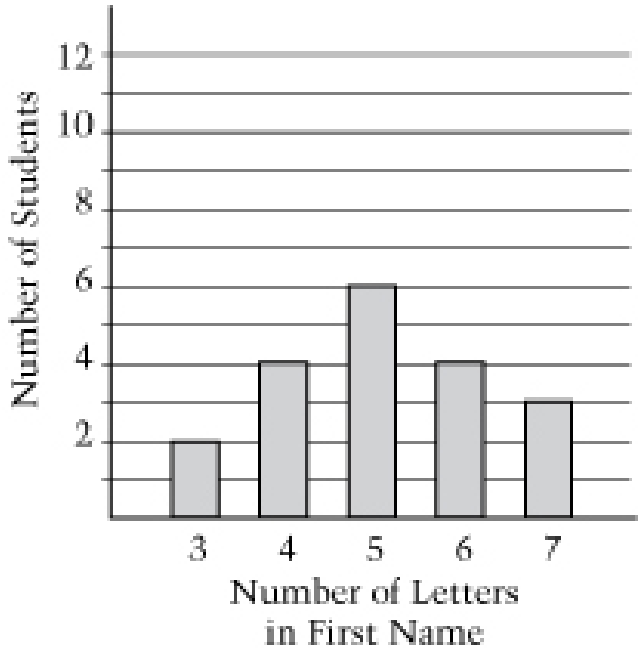
Number of blues: _____

Number of reds: _____

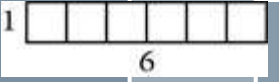
Explain how you found your answer.

NAEP Grade 4 Math Warm Ups

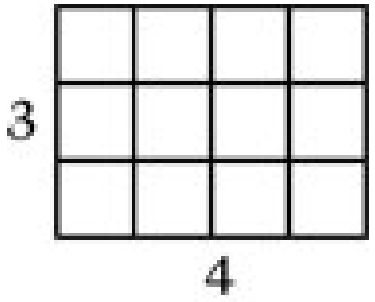
69. The students in a class each counted the number of letters in their first names. The class made the graph below of the results.



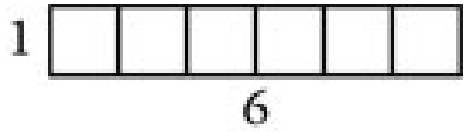
A new student, Victor, joined the class. Draw on the graph to include the data for Victor.

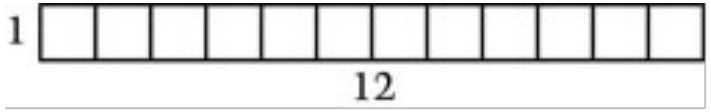


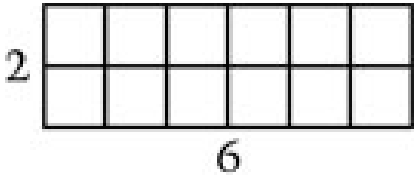
NAEP Grade 4 Math Warm Ups

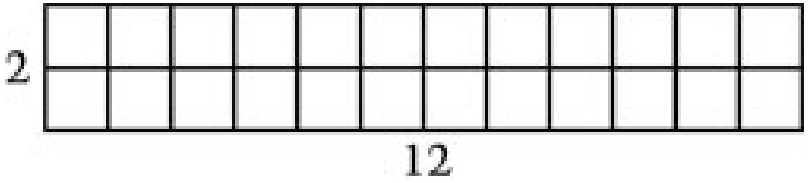


70. Which rectangle below has the same perimeter (distance around) as the rectangle above?

A. 

B. 

C. 

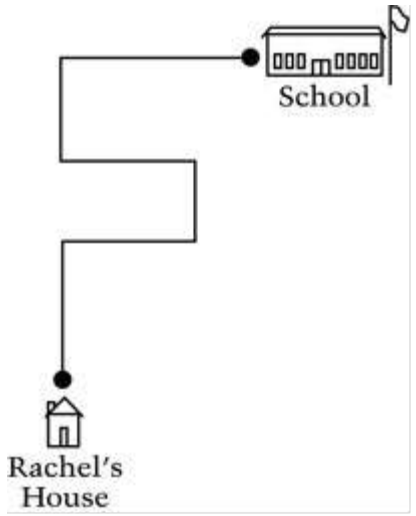
D. 

NAEP Grade 4 Math Warm Ups

71. The Ben Franklin Bridge was 75 years old in 2001. In what year was the bridge 50 years old?

A. 1951
B. 1976
C. 1984
D. 1986

NAEP Grade 4 Math Warm Ups



72. The picture shows Rachel's path to school. How many right angle turns does Rachel make to get to school?

A. Two
B. Three
C. Five
D. Seven

NAEP Grade 4 Math Warm Ups

π

73. A stop sign has 8 sides of equal length. Ryan knows that the length of each side is 10 inches.

Explain how Ryan can find the perimeter (distance around) of the sign.

What is the perimeter of the sign?

Answer: _____ inches

NAEP Grade 4 Math Warm Ups

74. There are 6 cubes of the same size in a jar.

2 cubes are yellow.

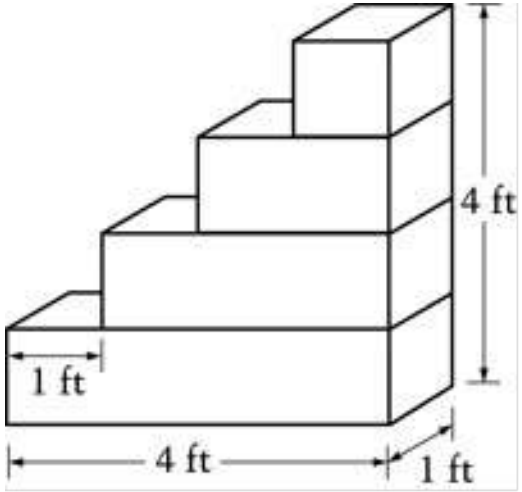
3 cubes are red.

1 cube is blue.

Chuck is going to pick one cube without looking. Which color is he most likely to pick? _____

What is the probability of this color being picked? _____

NAEP Grade 4 Math Warm Ups



75. Sierra built the block tower with 1-foot cubes. How many cubes did she use?

A. 4
B. 6
C. 8
D. 10