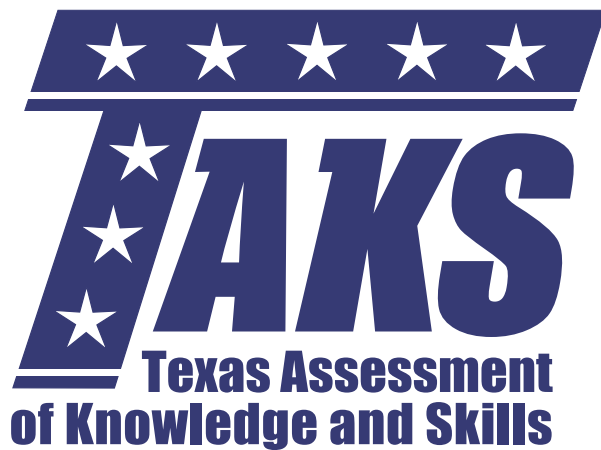


STUDENT NAME _____



**GRADE 6
MATHEMATICS**

Administered April 2009

Mathematics Chart

LENGTH

Metric

1 kilometer = 1000 meters
1 meter = 100 centimeters
1 centimeter = 10 millimeters

Customary

1 mile = 1760 yards
1 mile = 5280 feet
1 yard = 3 feet
1 foot = 12 inches

CAPACITY AND VOLUME

Metric

1 liter = 1000 milliliters

Customary

1 gallon = 4 quarts
1 gallon = 128 fluid ounces
1 quart = 2 pints
1 pint = 2 cups
1 cup = 8 fluid ounces

MASS AND WEIGHT

Metric

1 kilogram = 1000 grams
1 gram = 1000 milligrams

Customary

1 ton = 2000 pounds
1 pound = 16 ounces

TIME

1 year = 365 days
1 year = 12 months
1 year = 52 weeks
1 week = 7 days
1 day = 24 hours
1 hour = 60 minutes
1 minute = 60 seconds

Metric and customary rulers can be found on the separate Mathematics Chart.

Mathematics Chart

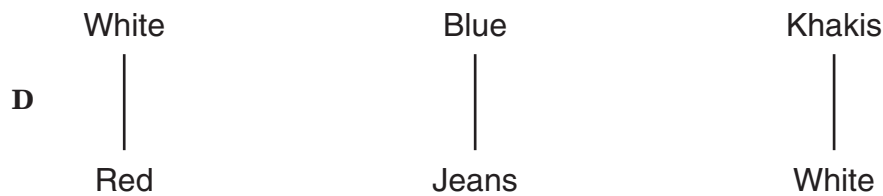
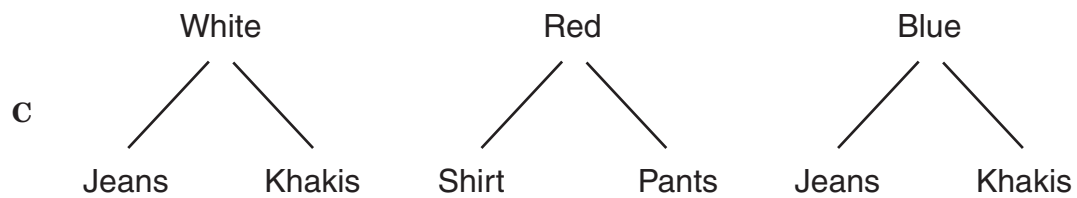
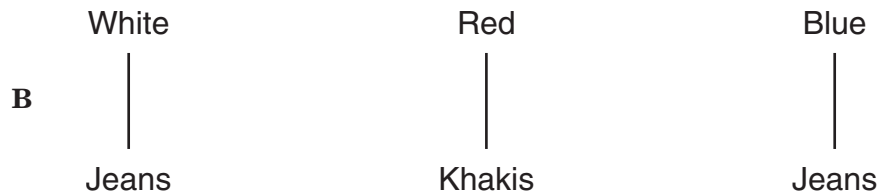
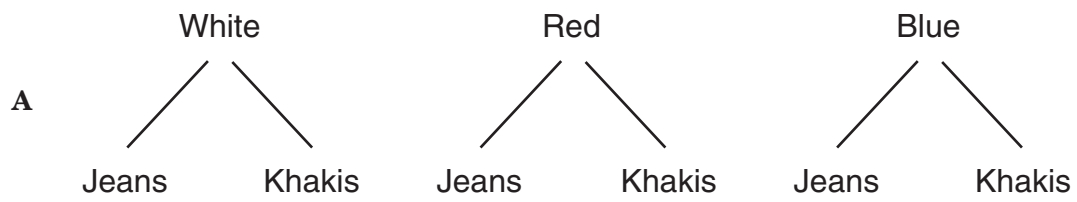
Perimeter	square	$P = 4s$
	rectangle	$P = 2l + 2w$ or $P = 2(l + w)$
Circumference	circle	$C = 2\pi r$ or $C = \pi d$
Area	square	$A = s^2$
	rectangle	$A = lw$ or $A = bh$
	triangle	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$
	trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$ or $A = \frac{(b_1 + b_2)h}{2}$
	circle	$A = \pi r^2$
Volume	cube	$V = s^3$
	rectangular prism	$V = lwh$
Pi	π	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$

1 Wayne is picking an outfit to wear to school. His choices are shown in the table below.

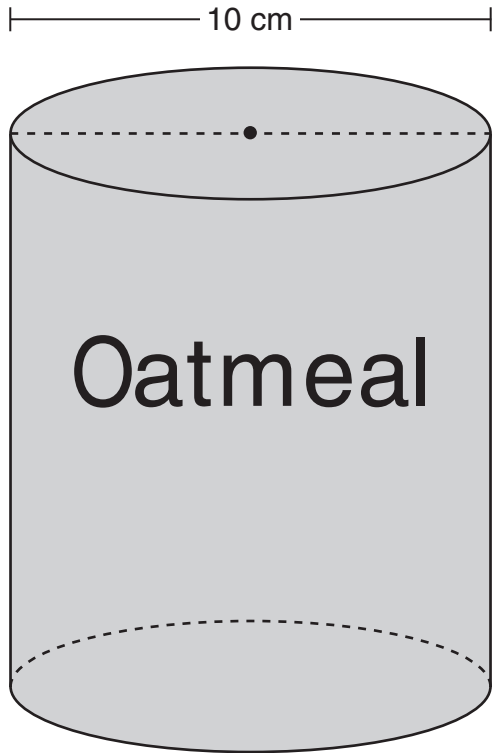
Wayne's Outfits

Shirt Color	Pants
White	Jeans
Red	Khakis
Blue	

Which of the following diagrams shows all the possible outcomes if Wayne picks 1 shirt and 1 pair of pants to wear?



- 2 The diameter of the circular top of an oatmeal container is 10 centimeters.



Which of the following expressions can be used to determine the circumference of the top of the oatmeal container in centimeters?

- F $10 \div \pi$
- G $20 \times \pi$
- H $20 \div \pi$
- J $10 \times \pi$

- 3 A teacher has 32 students in her class. She wants to put the students into groups so that each group has the same number of students. Which of the following does NOT represent the number of students she could put into groups?

- A 4
- B 10
- C 8
- D 16

- 4 Sally wrote two number patterns, as shown below.

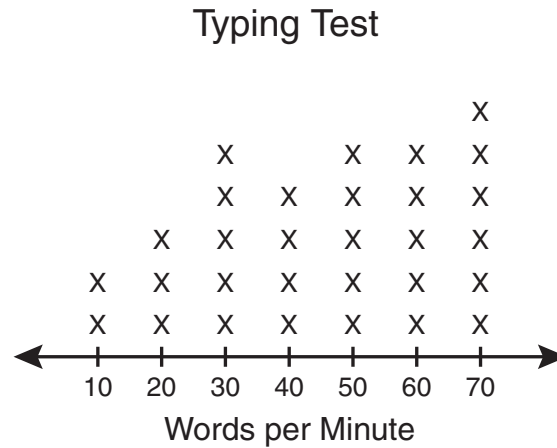
$$\text{Set R} = \{2, 4, 6, 8, 10, \dots\}$$

$$\text{Set T} = \{4, 8, 12, 16, 20, \dots\}$$

If these patterns continue, which of the following numbers would appear in both Set R and Set T?

- F 46
- G 30
- H 52
- J 70

- 5 Some students took an online typing test. The line plot below shows the number of students who typed different numbers of words per minute.



Which table correctly represents the information in this line plot?

Typing Test

A

Words per Minute	Number of Students
10	20
20	60
30	150
40	160
50	250
60	300
70	420

Typing Test

C

Words per Minute	Number of Students
20	10
60	20
150	30
160	40
250	50
300	60
420	70

Typing Test

B

Words per Minute	Number of Students
2	10
3	20
5	30
4	40
5	50
5	60
6	70

Typing Test

D

Words per Minute	Number of Students
10	2
20	3
30	5
40	4
50	5
60	5
70	6

- 6 The table below shows the base length and area of several triangles. All these triangles have a height of 8 feet.

Triangles

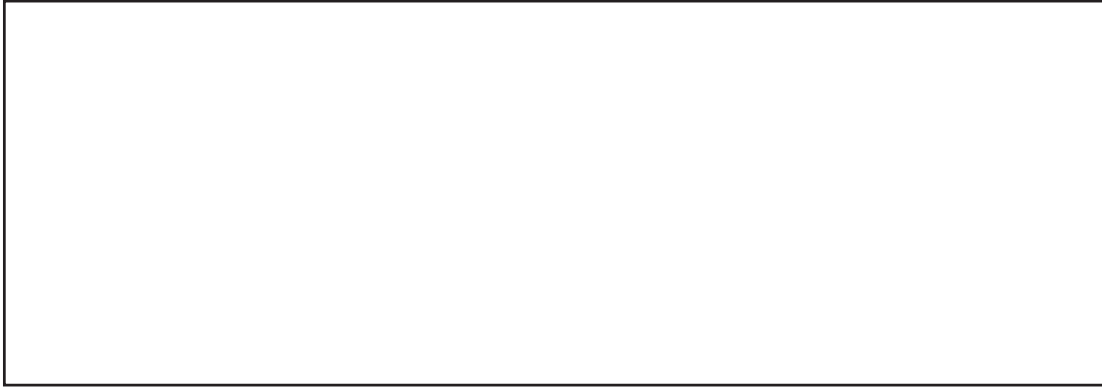
Base, b (feet)	Area, A (square feet)
4	16
8	32
12	48
16	64

Which of the following equations best represents the relationship between the base, b , and area, A , of these triangles?

- F $A = \frac{b}{4}$
- G $A = b^2$
- H $A = 4b$
- J $A = b + 12$

- 7 Which of the following statements about angle measures is true?
- A An angle that measures 90° is a straight angle.
- B An angle that measures 25° is an obtuse angle.
- C An angle that measures 180° is a right angle.
- D An angle that measures 88° is an acute angle.

- 8 The picture below is a scale drawing of a rectangular bulletin board. Use the ruler on the Mathematics Chart to measure the dimensions of the scale drawing to the nearest inch.



Scale
1 inch = 2 feet

Which of the following is closest to the perimeter in feet of the actual bulletin board?

- F 32 ft
- G 76 ft
- H 16 ft
- J 48 ft

- 9 Edward has 65% of a garden planted with lilies. Which fraction is equivalent to 65%?

- A $\frac{13}{2,000}$
- B $\frac{7}{20}$
- C $\frac{65}{1}$
- D $\frac{13}{20}$

- 10 Martha gives her plants a total of 2,000 milliliters of water each day. What is the total volume of water in liters that she gives her plants over 3 weeks?

- F 2 L
- G 6 L
- H 42 L
- J 60 L

- 11 Liza is learning about hummingbirds. She learned that the bee hummingbird can weigh 0.07 ounce and that the giant hummingbird can weigh 7 ounces. What is the difference between these two weights?

- A 6.93 oz
- B 7.07 oz
- C 6.97 oz
- D 0.63 oz

- 12 Rosanne took a total of 2 hours to write 30 party invitations. Which of the following equations can be used to find m , the number of minutes Rosanne took to write 1 invitation?

- F $(60 \div 30) \div 2 = m$
- G $(60 \times 30) + 2 = m$
- H $(60 \div 2) \times 30 = m$
- J $(60 \times 2) \div 30 = m$

- 13 Denise kept track of how much time she spent on her homework 4 days last week.

Homework

Day	Time (minutes)
Monday	100
Tuesday	120
Wednesday	45
Thursday	90

What is the total amount of time Denise spent on her homework these 4 days?

- A 4 hours 25 minutes
- B 5 hours 55 minutes
- C 4 hours 15 minutes
- D 3 hours 55 minutes

- 14 The list below shows the number of students out of 30 who chose different foods in the cafeteria.

- 11 students chose pizza.
- 4 students chose hamburgers.
- 3 students chose tacos.
- ? students chose salad.

How many students chose salad?

- F 18, because $11 + 4 + 3 = 18$
- G 26, because $30 - (11 - 4 - 3) = 26$
- H 12, because $30 - 11 - 4 - 3 = 12$
- J 20, because $30 - (11 - 4) - 3 = 20$

15 Mr. Drake bought muffins and drinks for a breakfast meeting. The muffins were sold in packages of 12, and the drinks were sold in packages of 18. What is the smallest number of packages of each item that Mr. Drake could have bought and still have the same number of muffins and drinks?

- A** 2 packages of muffins
3 packages of drinks
- B** 18 packages of muffins
12 packages of drinks
- C** 3 packages of muffins
2 packages of drinks
- D** 6 packages of muffins
9 packages of drinks

16 Susie drove from her house to the park. She drove 15 blocks east, 10 blocks north, 15 blocks west, 5 blocks north, and stopped at the park. Where is the park in relation to Susie's house?

- F** 15 blocks north
- G** 5 blocks north
- H** 45 blocks west
- J** 15 blocks east

17 Which pair of numbers are equivalent?

- A** 0.5, $\frac{1}{5}$
- B** 0.06, $\frac{6}{10}$
- C** $\frac{7}{10}$, 0.07
- D** $\frac{8}{100}$, 0.08

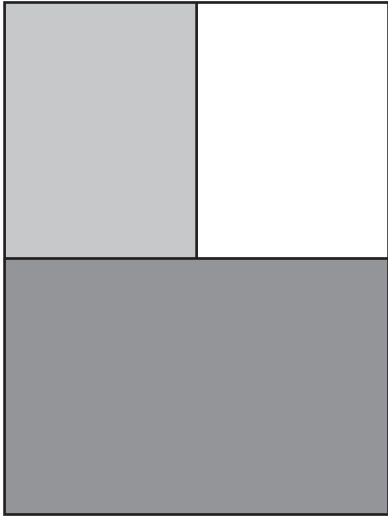
18 Alex has a box of 100 colored drinking straws. The box contains 30 red straws, 35 green straws, 20 yellow straws, and 15 purple straws. If he selects 1 straw without looking, what is the probability it will be yellow?

- F** $\frac{1}{5}$
- G** $\frac{4}{5}$
- H** $\frac{3}{10}$
- J** $\frac{3}{7}$

19 Mr. Perry bought a computer for \$1,920, including tax. If he pays for it in 16 equal payments, what will be the dollar amount of each payment?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

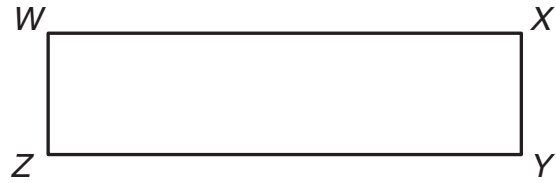
- 20 Newspaper advertisements can be $\frac{1}{4}$ of a page, $\frac{1}{2}$ of a page, or a full page. The shaded parts of the model below show the fractions of a page used for two advertisements.



Which of the following equations represents the total fraction of the page used for these two advertisements?

- F $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$
- G $\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$
- H $\frac{1}{4} + \frac{3}{4} = \frac{2}{4}$
- J $\frac{1}{2} + \frac{1}{2} = \frac{4}{4}$

- 21 If quadrilateral $WXYZ$ is a rectangle, which statement about this rectangle must be true?



- A The measures of $\angle W$ and $\angle X$ add up to 90° .
- B $\angle Y$ and $\angle Z$ are not congruent.
- C The measures of $\angle W$ and $\angle Y$ add up to 180° .
- D All the angles are acute.
- 22 Coach Abdi needs to buy 12 T-shirts for the girls' basketball team. The list below shows the prices of T-shirts at 2 stores.
- Store X: One T-shirt costs \$12.
 - Store Y: A package of 6 T-shirts costs \$60.

What is the amount of money Coach Abdi will save if she buys 12 T-shirts at Store Y?

- F \$264
- G \$48
- H \$216
- J \$24

- 23** The table below shows how the volume of a rectangular prism changes as its width increases and its length and height remain the same.

Rectangular Prisms

Width, w (inches)	Volume, V (cubic inches)
5	400
7	560
9	720
10	800

Which of the following equations best represents the relationship between the rectangular prism's width, w , and its volume, V ?

- A** $V = 20w + 300$
B $V = 80w$
C $V = w \div 80$
D $V = w + 395$
- 24** Mrs. Rudolf bought 3 frozen pizzas and a gallon of ice cream at a grocery store. Mrs. Rudolf knows her total bill and knows that the ice cream was \$2.89, but she wants to find the price for the pizza. How can she determine the cost of each frozen pizza?
- F** Divide the total bill by 3 and then subtract \$2.89 from the quotient
G Multiply \$2.89 by 3 and then subtract the product from the total bill
H Subtract \$2.89 from the total bill and then divide the difference by 3
J Subtract \$2.89 from the total bill and then multiply the difference by 3

- 25** Jonah measured the length of his thumb in centimeters. The length of his thumb was between 4.5 and 4.6 centimeters. Which of the following could have been the length of his thumb?

- A** 4.06 cm
B 4.51 cm
C 4.48 cm
D 4.61 cm

- 26** Tracy, Rob, and Gwen each bought different supplies for a class party. Tracy spent \$5 more than Gwen. Gwen spent \$3 less than Rob. Rob spent \$8. What is the total amount of money Tracy, Rob, and Gwen spent on supplies?

- F** \$16
G \$25
H \$10
J \$23

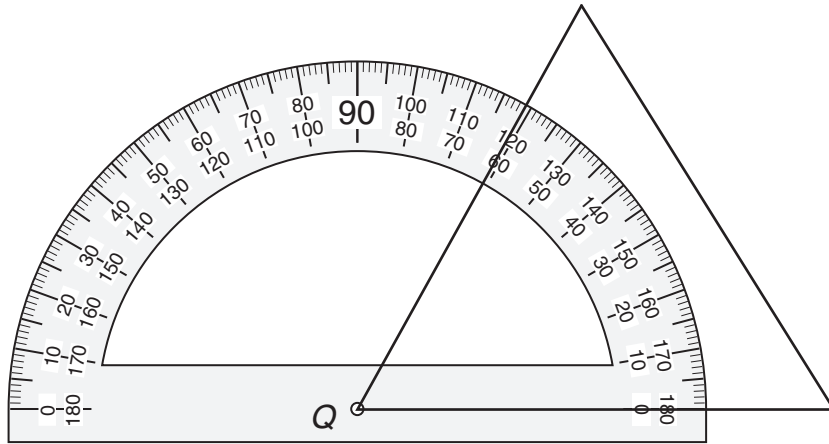
27 Which of the following models shows 45% shaded?



28 A circular puzzle has a circumference of about 50 inches. Which expression can be used to find the approximate radius of the puzzle?

- F $50 \div \pi$
- G $50 \div (2\pi)$
- H $50 \cdot (2\pi)$
- J $50 \cdot \pi$

29 What is the measure of $\angle Q$ to the nearest degree?



- A 79°
- B 119°
- C 121°
- D 61°

30 What is the value of the expression below?

$$20 - 3 \times (2 + 4)$$

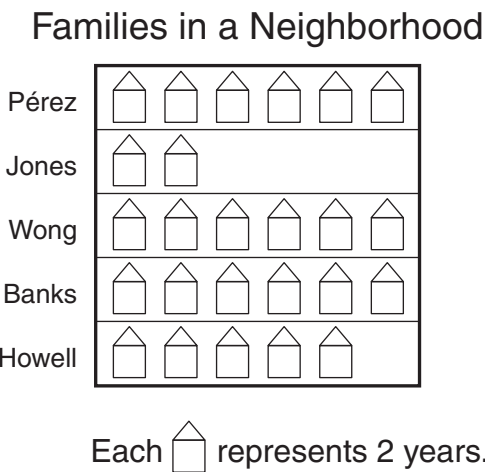
- F 38
- G 18
- H 2
- J 10

31 A restaurant has a total of 30 employees. There are 14 employees who work in the evening, and the rest work during the day. What is the ratio of the number of employees who work in the evening to the number of employees who work during the day?

- A 7:8
- B 7:15
- C 8:7
- D 8:15

- 32** Mario counted 21 buses in the parking lot at a band competition. If there were between 33 and 37 students on each bus, which is the best estimate of the total number of students on the buses?
- F** 91
G 600
H 700
J 875

- 33** The graph below shows the number of years that 5 families have lived in a neighborhood.



What is the mean number of years these families have lived in this neighborhood?

- A** 10 years
B 6 years
C 12 years
D 5 years

- 34** Janette has a spinner with 8 equal sections. Each section is labeled red, green, or yellow. What additional information is needed to find the probability of the arrow landing on a red section on the next spin?
- F** The radius of the spinner
G The circumference of the spinner
H The number of times Janette has landed on a green section
J The number of sections of each color

- 35** Karla is using nails to build birdhouses. The table below shows n , the number of nails she used to build b , different numbers of birdhouses.

Karla's Birdhouses

Number of Birdhouses, b	Number of Nails, n
2	22
3	33
4	44
5	55

If Karla keeps following this pattern, which of the following expressions can she use to find n , the number of nails it will take to build b birdhouses?

- A** $b - 11$
B $11b$
C $b + 11$
D $\frac{b}{11}$

36 What is the prime factorization of 550?

- F $2 \cdot 275$
- G $2 \cdot 5^2 \cdot 55$
- H $2 \cdot 25 \cdot 11$
- J $2 \cdot 5^2 \cdot 11$

37 The diameter of a circular plate is approximately 6 inches. Which of the following is closest to the circumference of the plate?

- A 36 in.
- B 108 in.
- C 18 in.
- D 54 in.

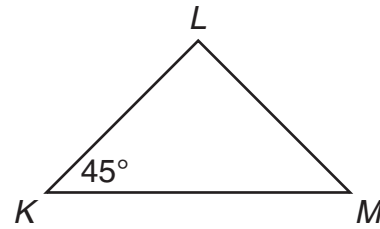
38 Five classes from East View Middle School went on a field trip.

- Two classes had 25 students each.
- The other classes had 23 students each.

What was the total number of students who went on the field trip?

- F 119
- G 48
- H 240
- J 53

39 In the triangle below, $\angle K$ is congruent to $\angle M$.



What is the measure of $\angle L$?

- A 45°
- B 180°
- C 135°
- D 90°

40 A candy company advertises that 3 out of 24 of its chocolate candy bars contain a prize. Based on this information, how many chocolate candy bars out of 120 should contain a prize?

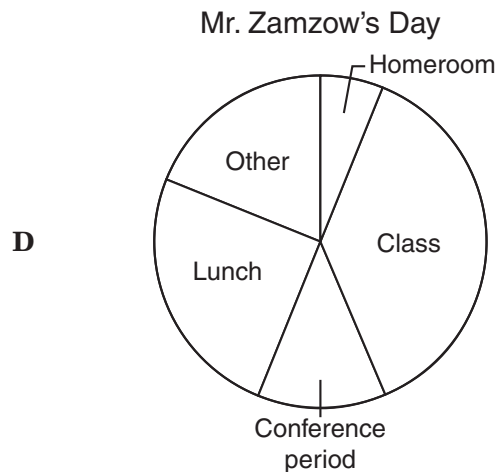
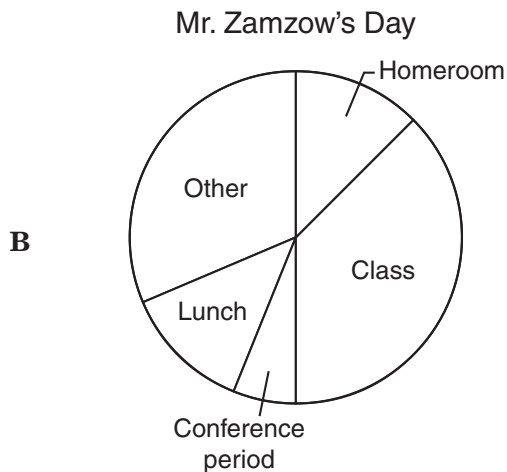
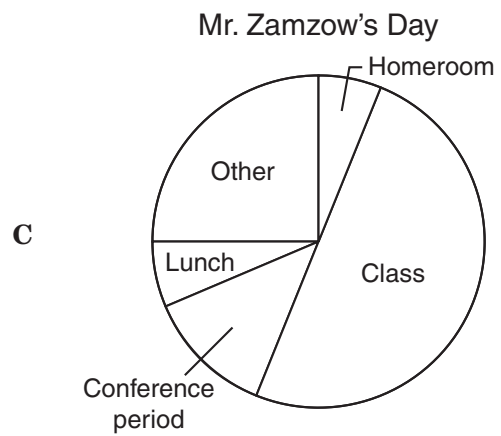
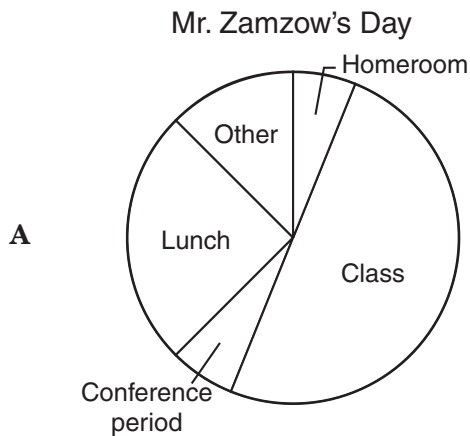
- F 15
- G 24
- H 27
- J 29

- 41 Mr. Zamzow recorded the number of hours he spent on various activities during an 8-hour school day. The results are shown in the table below.

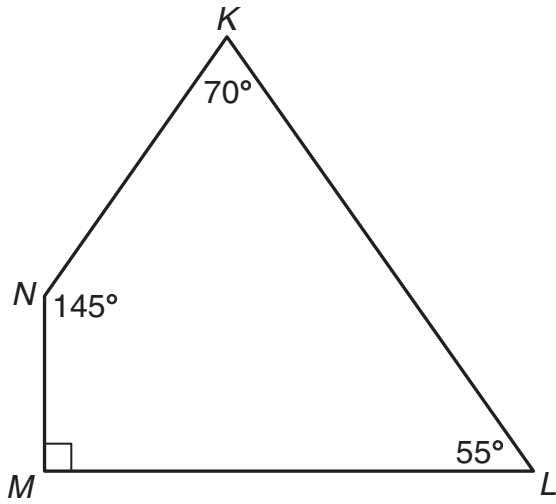
Mr. Zamzow's Day

Activity	Time (hours)
Homeroom	$\frac{1}{2}$
Class	4
Conference period	1
Lunch	$\frac{1}{2}$
Other	2

Which of the following graphs best represents the percentage of time Mr. Zamzow spent on each activity?

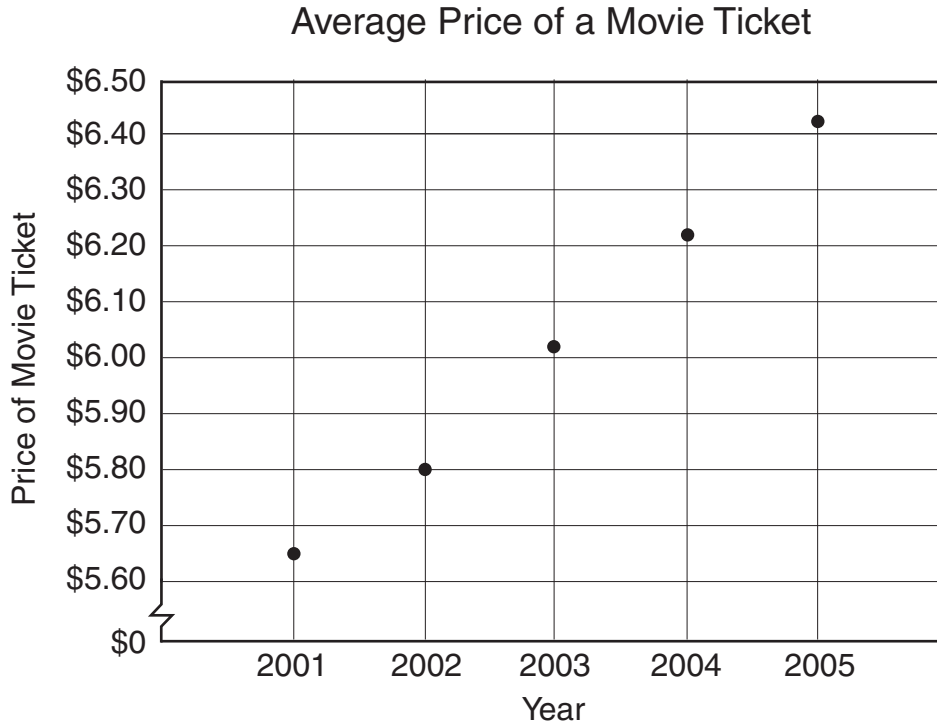


- 42 In quadrilateral $KLMN$, what type of angle is $\angle KNM$?



- F Acute
- G Obtuse
- H Right
- J Straight

- 43 The graph below shows the average price of a single movie ticket in the United States each year from 2001 to 2005.



Which of the following statements is supported by the information in the graph?

- A The greatest decrease in the average price of a movie ticket during this period occurred between 2003 and 2004.
- B The range of the prices is more than \$1.
- C The median price is about \$5.
- D The smallest increase in the average price of a movie ticket during this period occurred between 2001 and 2002.

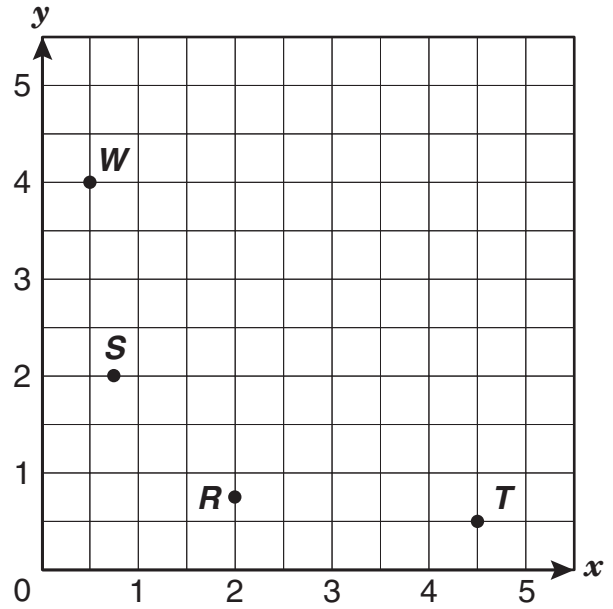
44 A secretary answered 88 phone calls in a day. Of these phone calls, 18 were from Plano, Texas. What is the ratio of the number of phone calls that were from Plano to the total number of phone calls that day?

- F 9 to 44
- G 9 to 35
- H 35 to 44
- J Not here

45 Diego subtracted 2 from the number of sides in an octagon. Then he multiplied this difference by 180 and divided the product by the number of sides of an octagon. If he did all this correctly, what was his final value?

- A 45
- B 225
- C 60
- D 135

46 Look at the grid below.



Which of the following ordered pairs best represents the location of point *T*?

- F $(4\frac{1}{2}, \frac{1}{2})$
- G $(2, \frac{1}{2})$
- H $(\frac{1}{2}, 4\frac{1}{2})$
- J $(\frac{1}{2}, 2)$

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS
ON THE ANSWER DOCUMENT.

