

# Mathematics Chart

## LENGTH

Metric	Customary
1 kilometer = 1000 meters	1 mile = 1760 yards
1 meter = 100 centimeters	1 mile = 5280 feet
1 centimeter = 10 millimeters	1 yard = 3 feet
	1 foot = 12 inches

## CAPACITY AND VOLUME

Metric	Customary
1 liter = 1000 milliliters	1 gallon = 4 quarts
	1 gallon = 128 ounces
	1 quart = 2 pints
	1 pint = 2 cups
	1 cup = 8 ounces

## MASS AND WEIGHT

Metric	Customary
1 kilogram = 1000 grams	1 ton = 2000 pounds
1 gram = 1000 milligrams	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.

Continued on the next page

## Mathematics Chart

<b>Perimeter</b>	square	$P = 4s$
	rectangle	$P = 2l + 2w$ or $P = 2(l + w)$
<b>Circumference</b>	circle	$C = 2\pi r$ or $C = \pi d$
<b>Area</b>	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	$A = \pi r^2$
<b>Volume</b>	cube	$V = s^3$
	rectangular prism	$V = lwh$
<b>Pi</b>	$\pi$	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$

**DIRECTIONS**

Read each question. Then fill in the correct answer on your answer document.

**SAMPLE A**

Find the greatest common factor of 12 and 18.

- A** 3
- B** 6
- C** 9

**SAMPLE B**

Find the perimeter of this square rug in meters.



5m

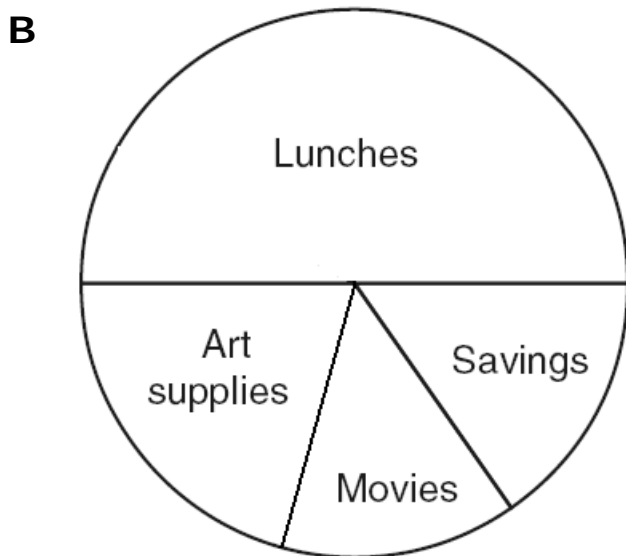
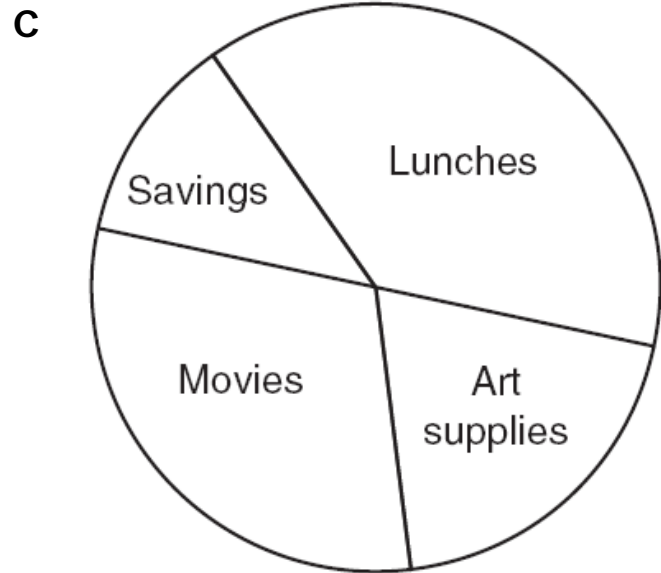
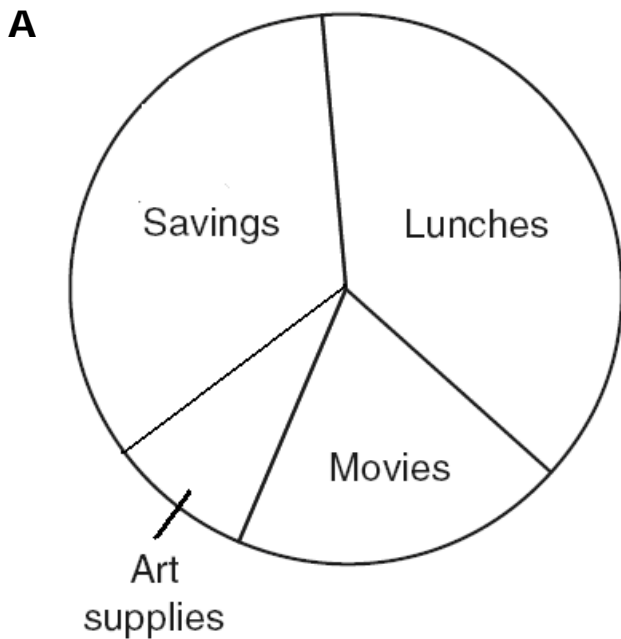
**Perimeter (P)**  
 $P = 4s$

- F** 20
- G** 35
- H** 25.5



1. Angela receives \$20.00 each week. She spends:  
 \$7.50 on lunches;  
 \$6.00 on movies;  
 \$4.00 on art supplies; and puts  
 \$2.50 into savings.

Which graph best represents how Angela spends her money?



2. A teacher handed out 32 sheets of graph paper equally among 8 groups of students.

Which equation can be used to find  $s$ , the number of sheets of paper each group received?

**F**  $s = 32 \div 8$

**G**  $s = 32 - 8$

**H**  $s = 32 + 8$

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3. What is the **prime factorization** of 220?

**Prime factorization:** division of a number into prime numbers (numbers that cannot be divided further) that multiply together to equal the original number.

**A**  $12 \cdot 3$

**B**  $6 \cdot 8 \cdot 10$

**C**  $2 \cdot 2 \cdot 5 \cdot 11$



4. A cafeteria has six tables that seat 4 people each and five tables that seat 8 people each.

What is the maximum number of people who can sit at the tables in the cafeteria?

**F** 64

**G** 12

**H** 22



5. Jeremy has \$70. He wants to go to the movies and buy a book. He wants to save the money he has left.

Which is the correct order of steps to find the amount of money Jeremy would have saved if he went to see the movie and bought a book?

**Step A:** Add the cost of the movie and the book.

**Step B:** Subtract the cost of the movie and book from \$70.

**Step C:** Find the cost of the movie and the cost of the book.

**A** B, A, C

**B** C, A, B

**C** B, C, A

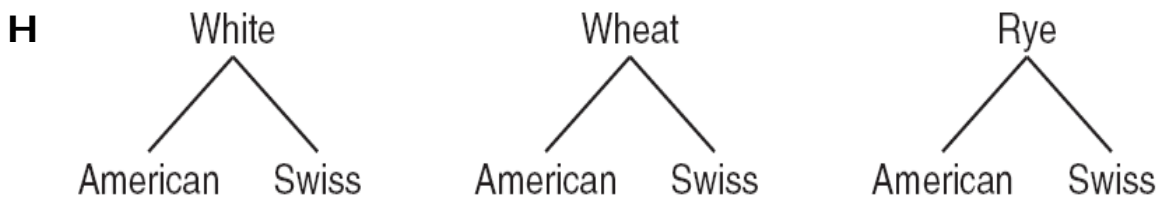
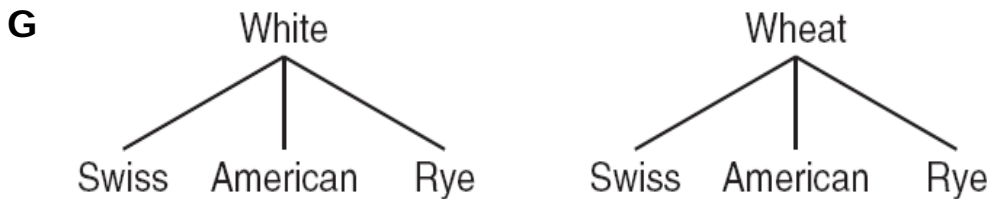
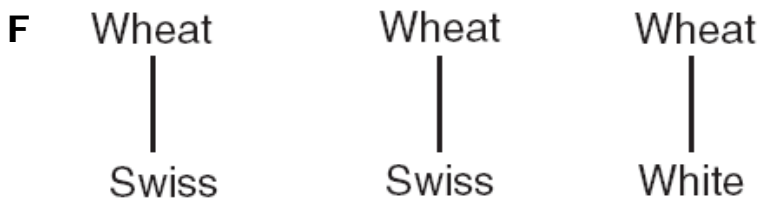


6. The following choices are available for bread and cheese:

**Bread:** White, Wheat, Rye

**Cheese:** Swiss, American

Which diagram shows all the possible combinations of 1 type of bread and 1 type of cheese?



7. A recipe for pancakes requires 3 eggs and makes 12 pancakes.

What is the **ratio** of eggs to pancakes?

**Ratio:** compares the values of two or more amounts

A 8:7

B 1:4

C 9:2

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8. Ann has \$10.00 to buy apples. Apples are \$2.50 per bag. Which additional information is needed to find the number of apples Ann can buy?

F How much each apple weighs

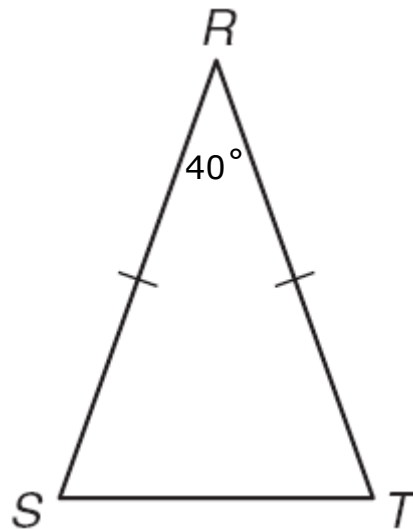
G The number of apples in each bag

H The color of the bag



9.  $\triangle RST$  shown below is an **isosceles triangle**.

**Isosceles triangle:** triangle with two equal sides and two equal angles.



If the measure of  $\angle R$  is  $40^\circ$ , what is the measure of  $\angle S$ ?

- A  $20^\circ$
- B  $420^\circ$
- C  $70^\circ$

**GO ON** 

**10.** What is the **median** of the numbers listed?

1, 2, 2, 8, 9, 14

**Median:** the middle value in an ordered set of values.

**F** 1

**G** 5

**H** 16



**11.** The **ratio** of women to men in a book club is 7 to 3.

**Ratio:** compares the values of two or more amounts

Which combination of women and men could the club have?

- A** 21 women and 9 men
- B** 5 women and 7 men
- C** 87 women and 11 men



12. The table below shows the number of minutes it takes to wash cars and trucks at Jay's Car Wash.

**Vehicle Washing Times**

Type of Vehicle	Washing Time (minutes)
Car	8
Truck	10

What is the number of trucks the machine can wash in one hour?

1 hour = 60 min

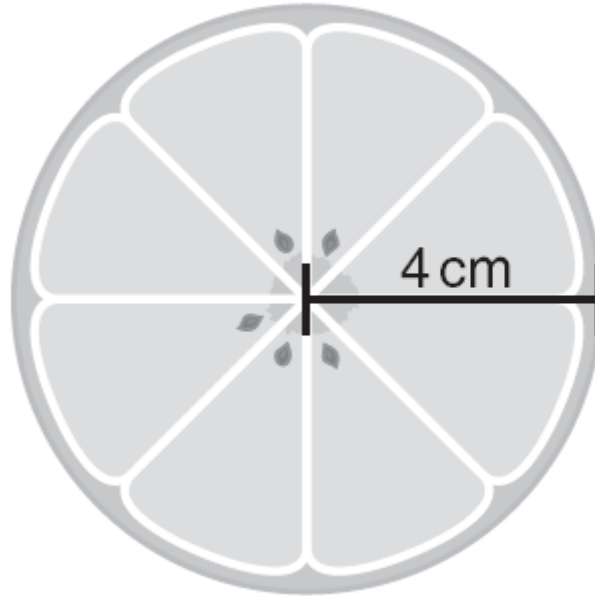
F 8

G 6

H 12



**13.** Which expression can be used to find the approximate circumference of this piece of orange?



$$C = 2\pi r$$

- A**  $2(4)$
- B**  $\pi(r)$
- C**  $2(\pi)(4)$



**14.** The table below shows the number of acorns collected and eaten on two days.

Which expression best describes the information in the table if the squirrels had stored 400 acorns before Monday?

**Acorns Collected and Eaten**

Day	Number Collected	Number Eaten
Monday	23	8
Tuesday	29	10

**F**  $23 - 8 + 29 - 10 - 400$

**G**  $400 + 23 - 8 + 29 - 10$

**H**  $23 + 8 - 29 + 10 \times 400$



**15.** What is the greatest common factor of 60, 45, and 30?

**A** 15

**B** 7

**C** 18

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**16.** Mr. Cartwright bought 18 computer books for his bookstore. If he paid \$25.50 for each book, about how much did Mr. Cartwright pay for the books?

**F** \$730

**G** \$220

**H** \$460



**17.** Paul made 11 of the 20 shots he took at basketball practice yesterday.

What percent of his shots did he make?

**A** 100%

**B** 55%

**C** 4%



**18.** A school is planning an awards dinner for students, teachers, and parents. The school plans to seat the guests around a table that has seating for 30 people. The guests will be seated in the order of student, teacher, parent, in a repeating pattern.

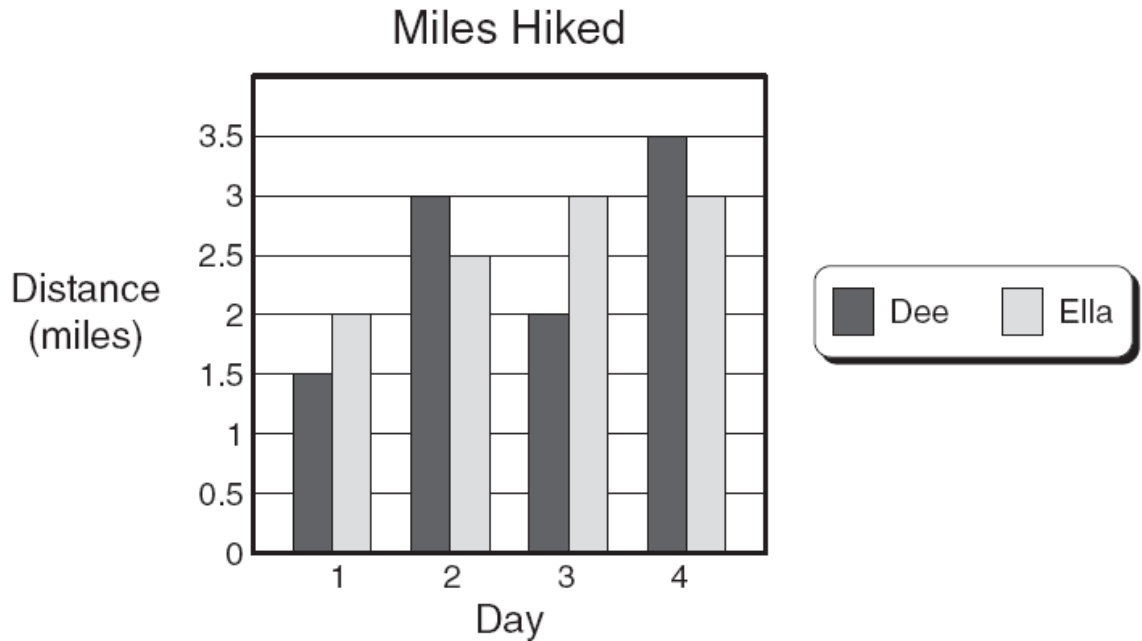
<b>Number of Chair</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>Order of Guest</b>	S	T	P	S	T	P	S	T	P	S	T	P									?

Will the 20th guest be a student, a teacher, or a parent?

- F** Student
- G** Teacher
- H** Parent



**19.** Dee and Ella kept track of the miles they hiked over 4 days, as shown in the graph below.



Which statement is best supported by the information in the graph?

- A** Dee always walked more than Ella did.
- B** Ella walked more miles on day 3 than Dee did.
- C** Dee walked less miles on day 4 than Ella.

**GO ON** 

**20.** Sandy had \$25.60. She then bought a CD that cost \$13.20, including tax.

How much money does Sandy have left?

**F** \$12.40

**G** \$38.00

**H** \$3.00



21. Look at the chart below.

### Carpet Calculations

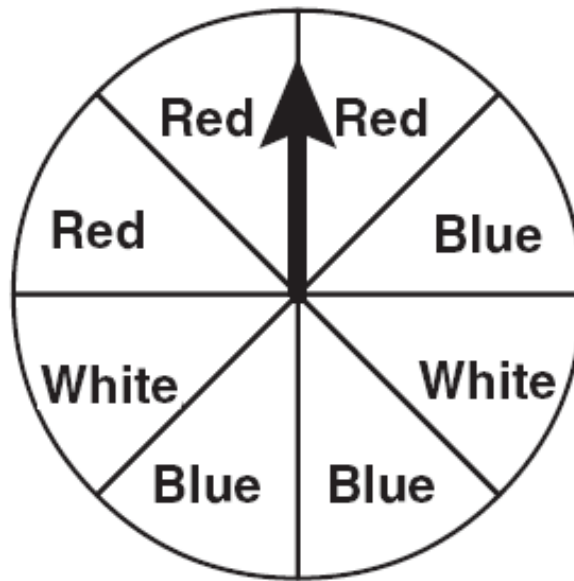
Area of Floor (square feet)	Amount of Carpet (square yards)
26	13
50	25
100	50

Which statement describes the calculation used to determine the amount of carpet needed for a given area of floor?

- A The area of the floor is divided by 9.
- B The area of the floor is divided by 10.
- C The area of the floor is divided by 2.



22. What is the probability that the arrow will land on a red section of the spinner?



F  $\frac{1}{8}$

G  $\frac{3}{8}$

H  $\frac{8}{5}$

**GO ON** 

**23.** The temperature was  $48^{\circ}\text{F}$  at 10 A.M. and  $69^{\circ}\text{F}$  at 3 P.M.

About how much warmer was the temperature at 3 P.M. than it was at 10 A.M.?

- A**  $5^{\circ}\text{F}$
- B**  $20^{\circ}\text{F}$
- C**  $100^{\circ}\text{F}$



24. Ray pays \$550 in rent each month. Which table best represents the relationship between  $m$ , the number of months, and  $r$ , the amount he pays in rent for that length of time?

**F**

$M$	$r$ (dollars)
1	550
2	1,100
3	1,650

**G**

$M$	$r$ (dollars)
1	550
2	350
3	450

**H**

$M$	$r$ (dollars)
1	1,550
2	1,050
3	550



**25.** Pam played basketball for 8 hours and golf for 5 hours during a period of 2 weeks. If Pam continues to play basketball and golf at this rate, how many hours will she spend doing them during 10 weeks?

- A** 8 hours
- B** 65 hours
- C** 10 hours



**26.** Which equation best represents the relationship between  $x$  and  $y$  in the table below?

$X$	$Y$
1	7
3	11
5	15

**F**  $y = x + 10$

**G**  $y = 8x$

**H**  $y = 2x + 5$



**27.** What is the **circumference** of a circle with a diameter of 19 inches?

**Circumference:** the distance around a circle

$$C = \pi d$$

- A** 13 in.
- B** 57 in.
- C** 300 in.



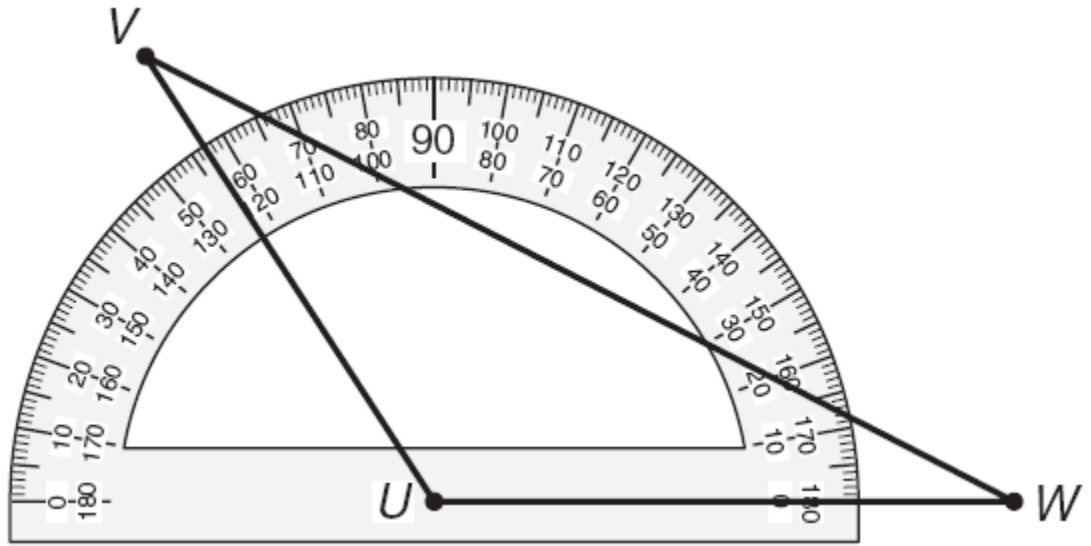
**28.** To get ready for a race, Louise ran  $1\frac{2}{3}$  miles on Monday,  $2\frac{1}{4}$  miles on Tuesday, and  $2\frac{5}{6}$  miles on Wednesday.

Which procedure can Louise use to find the total number of miles she ran on these 3 days?

- F** Find the product of the sum of the whole numbers and the sum of the fractions
- G** Subtract the sum of the fractions from the sum of the whole numbers
- H** Add the sum of the whole numbers to the sum of the fractions



29. Triangle  $\Delta VUW$  is shown below.



What is the measure of  $\Delta VUW$  to the nearest degree?

- A  $155^\circ$
- B  $10^\circ$
- C  $123^\circ$



**30.** Ms. Martin has 20 calculators that need batteries. Each calculator uses 4 batteries. The batteries are sold in packages of 10.

How many packages of batteries does Ms. Martin need to buy?

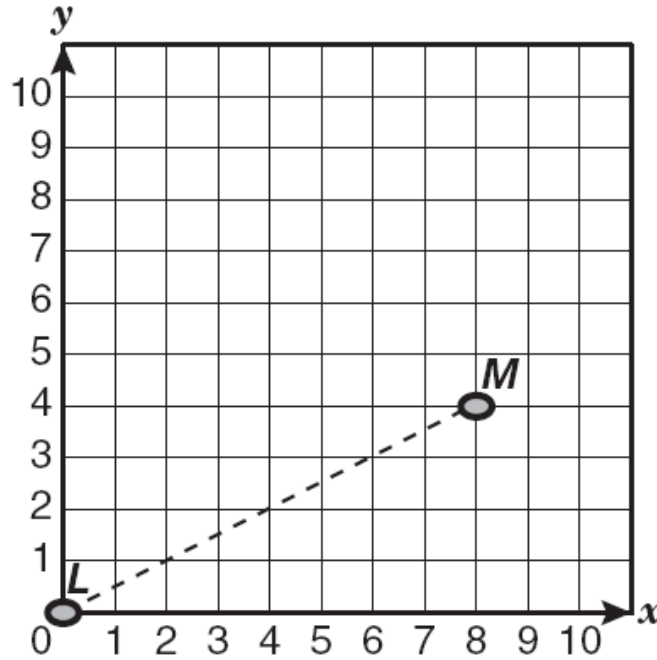
**F** 8

**G** 60

**H** 3



31. Which of the following best shows the position halfway between point L and point M?



- A (8, 4)
- B (2, 4)
- C (4, 2)



**32.** Zack attended a basketball camp for two weeks. His parents paid \$50.00, which was  $\frac{1}{3}$  the cost of attending the camp. Zack had saved money to pay the rest of the cost.

Which equation can be used to find  $c$ , the entire cost of attending the camp?

**F**  $c = \frac{1}{(50 \cdot 3)}$

**G**  $c = 50 \cdot 3$

**H**  $c = \frac{50}{3}$



**33.** The total length of all the songs on a CD is about 80 minutes. Each song is between 4 and 6 minutes long. Which is a reasonable number of songs that could be on the CD?

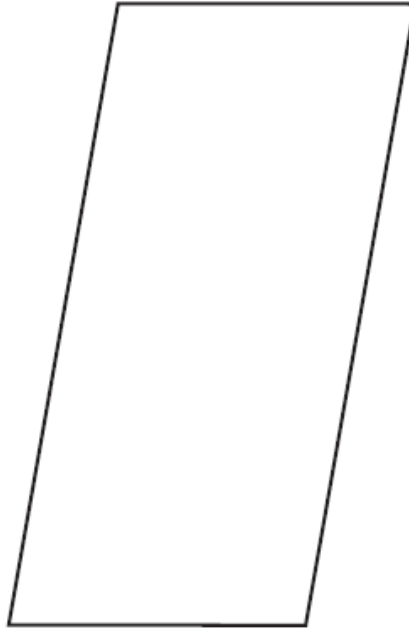
**A** 74

**B** 16

**C** 3



34. Look at the **parallelogram** shown below.



**Parallelogram:** four-sided figure with 2 angles matching one another, and the other 2 angles also matching one another

Which of the following could be the measures of the angles of the parallelogram?

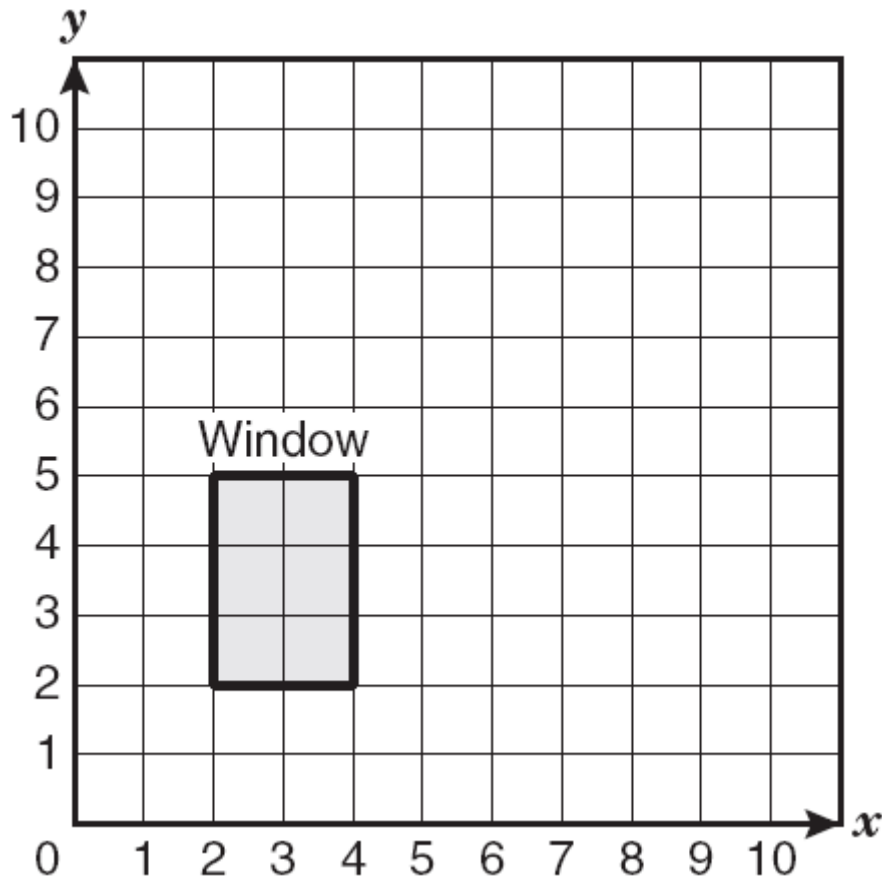
F  $120^\circ, 60^\circ, 120^\circ, 120^\circ$

G  $80^\circ, 100^\circ, 80^\circ, 100^\circ$

H  $100^\circ, 90^\circ, 80^\circ, 90^\circ$



35. A window is shown on the grid below.



Which ordered pairs best represent the 4 **vertices** of the box?

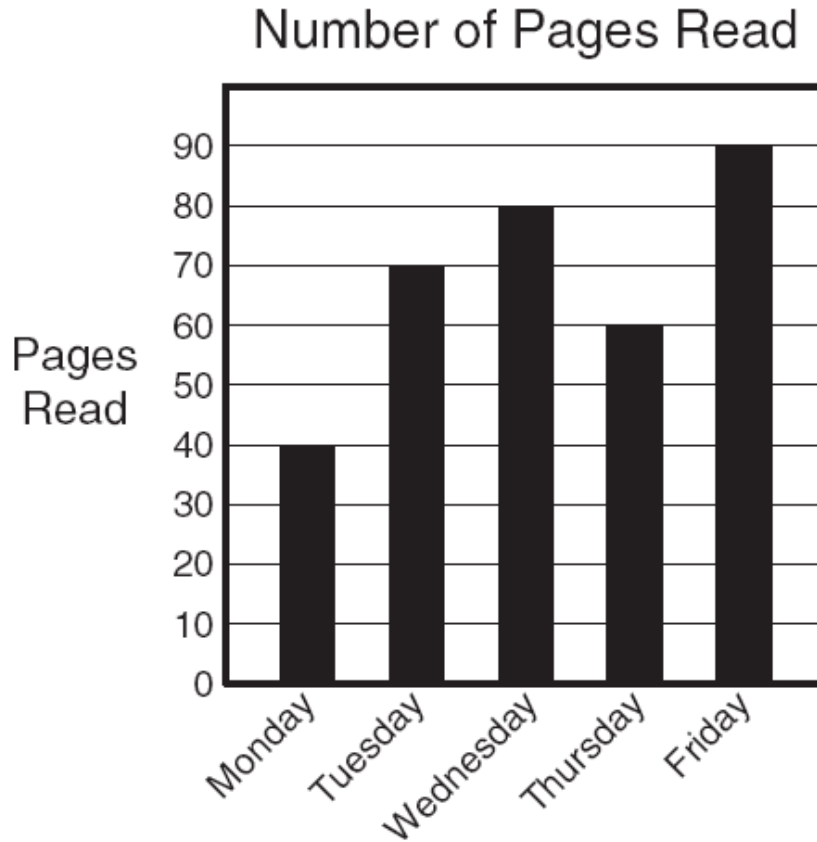
**Vertices:** points where the edges of a shape meet

- A (2, 2), (2, 8), (3, 3), (4, 5)
- B (3, 9), (3, 7), (5, 6), (5, 2)
- C (2, 2), (4, 2), (4, 5), (2, 5)

**GO ON** 

**36.** The graph below shows the number of pages of a book that John read each day.

Which statement is best supported by the information in the graph?



- F** John read less on Wednesday than on Thursday
- G** John read 90 pages on Monday
- H** John read more on Wednesday and Friday than on Monday and Thursday



37. Look at the graph below.

### Volcanoes

Type of Volcano	Angle of Slope
Cinder cone	Between 30 and 40 degrees
Composite cone	Up to 30 degrees
Shield	Less than 10 degrees

Based on the data in the table, which of the following statements is true about these volcanoes?

**Obtuse angle:** an angle measuring more than  $90^\circ$

**Acute angle:** an angle measuring less than  $90^\circ$

- A** The cinder cone has an obtuse angle of slope, and the composite cone and shield have acute angles of slope.
- B** All the volcanoes have acute angles of slope.
- C** The cinder cone has an acute angle of slope, and the composite cone and shield have obtuse angles of slope.

