M032064

Ann and Jenny divide 560 zeds between them. If Jenny gets $\frac{3}{8}$ of the money, how many zeds will Ann get?

M032094

$\frac{4}{100} + \frac{3}{1000} =$

[A] 0.043

[B] 0.1043

[C] 0.403

[D] 0.43

M032166

Which of these is the BEST estimate of $\frac{7.21 \times 3.86}{10.09}$?

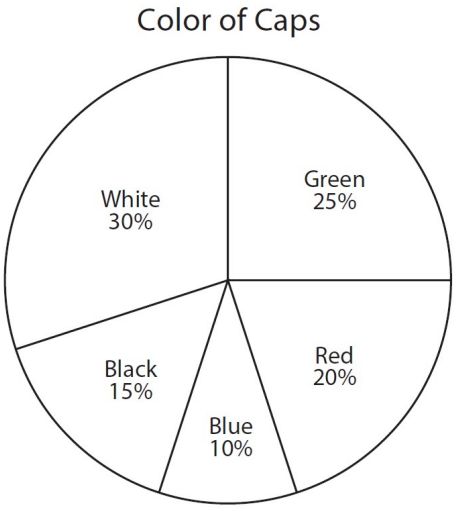
[A] $\frac{7 \times 3}{10}$

[B] $\frac{7 \times 4}{10}$

[C] $\frac{7 \times 3}{11}$

[D] $\frac{7 \times 4}{11}$

M032595



The pie chart shows the percentage of caps for sale at a sporting goods store. If there are 200 caps, what is the total number of caps that are either white or green?

[A] 55

[B] 100

[C] 110

[D] 145

M032626

Which of these shows how 36 can be expressed as a product of prime factors?

[A] 6×6

[B] 4×9

[C] $4 \times 3 \times 3$

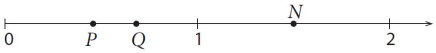
[D] $2 \times 2 \times 3 \times 3$

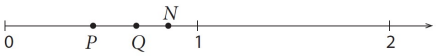
M032662

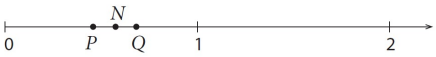
P and Q represent two fractions on the number line above.

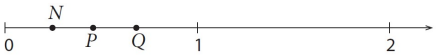
$P \times Q = N$.

Which of these shows the location of N on the number line?

A. 

B. 

C. 

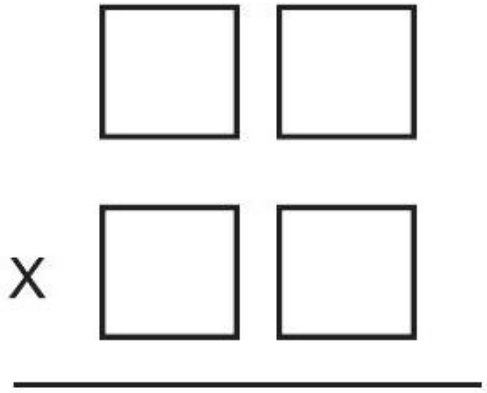
D. 

M032725

Write $3\frac{5}{6}$ in decimal form, rounded to 2 decimal places.

M042002

Place the four digits $3, 5, 7$, and 9 into the boxes below in the positions that would give the greatest result when the two numbers are multiplied.



M042016

Look at this table:

4^1	4^2	4^3	4^4	4^5	4^6
4	16	64	256	1,024	4,096

Use the table to express the value of $256 \times 4,096$ as a power of 4 .

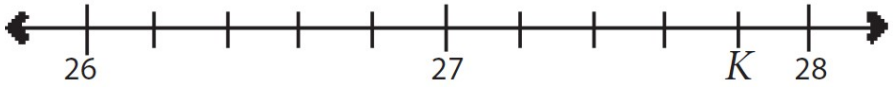
[A] 4^{10}

[B] 4^{16}

[C] 4^{20}

[D] 4^{24}

M042024



Which number does K represent on this number line?

[A] 27.4

[B] 27.8

[C] 27.9

[D] 28.2

M042031

The fractions $\frac{4}{14}$ and $\frac{\square}{21}$ are equivalent.

What is the value of $\square$?

[A] 6

[B] 7

[C] 11

[D] 14

M042032

Which fraction is equivalent to 0.125 ?

[A] $\frac{125}{100}$

[B] $\frac{125}{1{,}000}$

[C] $\frac{125}{10{,}000}$

[D] $\frac{125}{100{,}000}$

M042041

A workman cut off $\frac{1}{5}$ of a pipe. The piece he cut off was 3 meters long. How many meters long was the original pipe?

[A] 8 m

[B] 12 m

[C] 15 m

[D] 18 m

M042059

Peter, James, and Andrew each had 20 tries at throwing balls into a basket. Complete the missing boxes below.

Name	Number of Successful Shots	Percentag Successful Shots
Peter	10 out of 20	50%
James	15 out of 20	☐
Andrew	☐ out of 20	80%

M042186

Here is a pattern:

$3 - 3 = 0$

$3 - 2 = 1$

$3 - 1 = 2$

$3 - 0 = 3$

What will the next line in the pattern be?

M052061

Kim is packing eggs into boxes.

Each box holds 6 eggs.

She has 94 eggs.

What is the smallest number of boxes she needs to pack all the eggs?

M052214

Which of these number sentences is true?

[A] $\frac{3}{10}$ of $50 = 50\%$ of 3

[B] 3% of $50 = 6\%$ of 100

[C] $50 \div 30 = 30 \div 50$

[D] $\frac{3}{10} \times 50 = \frac{5}{10} \times 30$

M052216

Which number is equal to $\frac{3}{5}$?

[A] 0.8

[B] 0.6

[C] 0.53

[D] 0.35

M052228

Which shows a correct method for finding $\frac{1}{3} - \frac{1}{4}$?

[A] $\frac{1-1}{4-3}$

[B] $\frac{1}{4-3}$

[C] $\frac{3-4}{3\times4}$

[D] $\frac{4-3}{3\times4}$

M052231

$42.65 + 5.748 =$

M032047

What is the sum of the three consecutive whole numbers with $2n$ as the middle number?

[A] $6n + 3$

[B] $6n$

[C] $6n - 1$

[D] $6n - 3$

M032295

There were m boys and n girls in a parade. Each person carried 2 balloons. Which of these expressions represents the total number of balloons that were carried in the parade?

[A] $2(m + n)$

[B] $2 + (m + n)$

[C] $2m + n$

[D] $m + 2n$

M032352

Bush height (**cm**)	Shadow length (**cm**)
20	16
40	32
60	48
80	64

The table above shows the shadow lengths of four bushes of different heights at 10a.m. What is the shadow length at 10a.m. of a bush that has a height of 50 centimeters?

[A] 36 cm

[B] 38 cm

[C] 40 cm

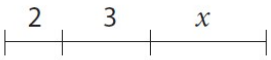
[D] 42 cm

M032419

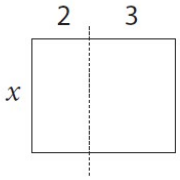
Which of these could represent the expression $2x + 3x$?

A. The length of this segment:

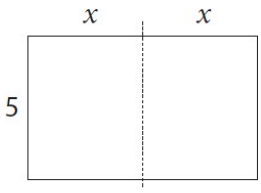
B. The length of this segment:



C. The area of this figure:

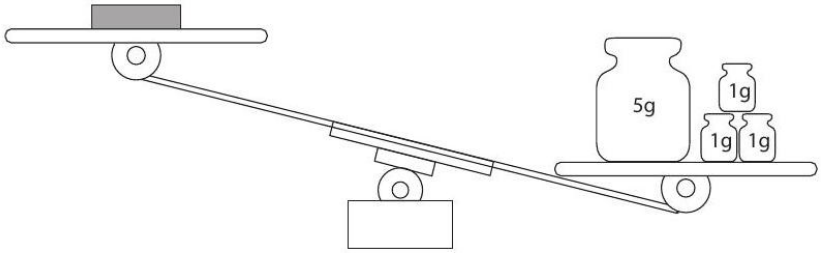


D. The area of this figure:

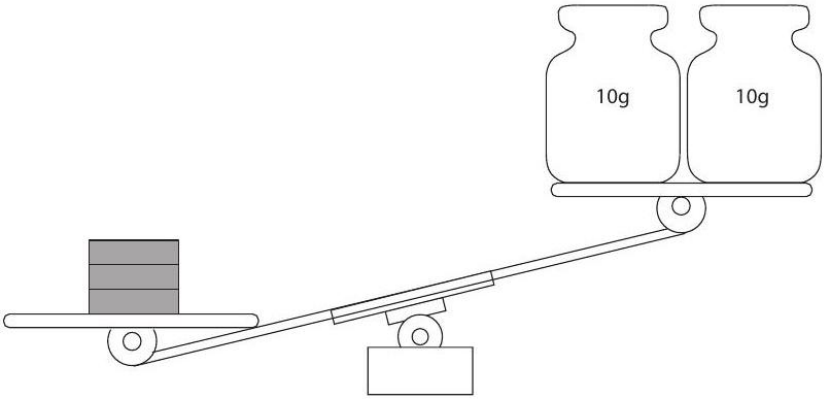


M032424

Jo has three metal blocks. The weight of each block is the same. When she weighed one block against 8 grams, this is what happened.



When she weighed all three blocks against 20 grams, this is what happened.



Which of the following could be the weight of one metal block?

[A] 5 g

[B] 6 g

[C] 7 g

[D] 8 g

M032477

The taxi company has a basic charge of 25 zeds and a charge of 0.2 zeds for each kilometer the taxi is driven. Which of these represents the cost in zeds to hire a taxi for a trip of n kilometers?

[A] $25 + 0.2n$

[B] $25 \times 0.2n$

[C] $0.2 \times (25 + n)$

[D] $0.2 \times 25 + n$

M032538

Use the formula $y = 100 - \frac{100}{1+t}$ to find the value of y when $t = 9$.

M032673

If t is a number between 6 and 9 , then $t + 5$ is between what two numbers?

[A] 1 and 4

[B] 10 and 13

[C] 11 and 14

[D] 30 and 45

M032683

Simplify the expression $\frac{3x}{8} + \frac{x}{4} + \frac{x}{2}$. Show your work.

M032738

What does $xy + 1$ mean?

[A] Add 1 to y, then multiply by x.

[B] Multiply x and y by 1 .

[C] Add x to y, then add 1 .

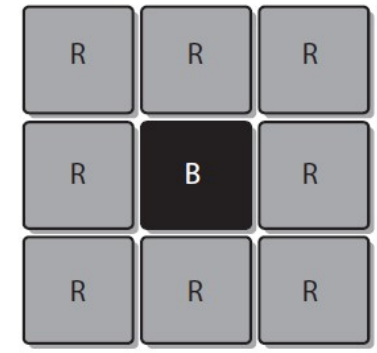
[D] Multiply x by y, then add 1 .

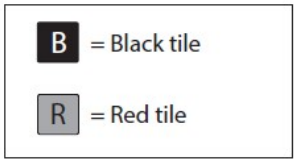
M032757

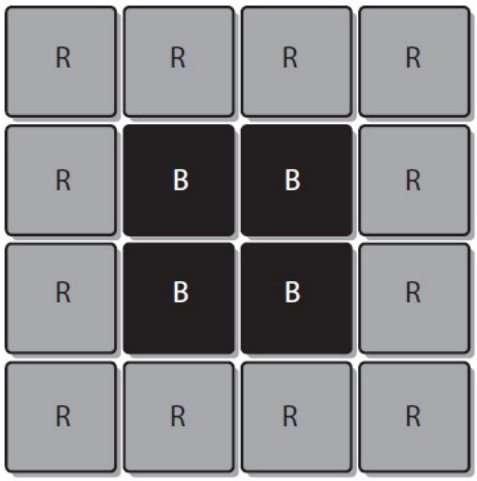
Pat has red tiles and black tiles. Pat uses the tiles to make square shapes.

The 3×3 shape has 1 black tile and 8 red tiles.

The 4×4 shape has 4 black tiles and 12 red tiles.







The table below shows the number of tiles for the first three shapes Pat made. Pat continued making shapes using this pattern. Complete the table for the 6×6 and 7×7 shapes.

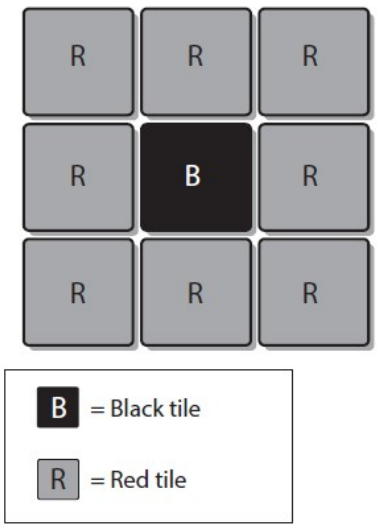
Shape	Number of Black Tiles	Number of Red Tiles	Total Number of Tiles
3×3	1	8	9
4×4	4	12	16
5×5	9	16	25
6×6	16		
7×7	25		

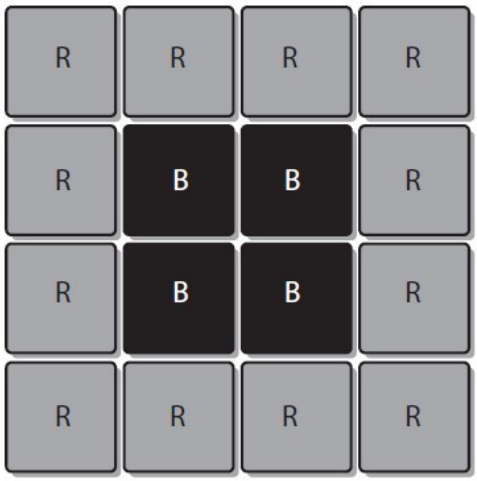
M032760A

Pat has red tiles and black tiles. Pat uses the tiles to make square shapes.

The 3×3 shape has 1 black tile and 8 red tiles.

The 4×4 shape has 4 black tiles and 12 red tiles.





The table below shows the number of tiles for the first three shapes Pat made. Pat continued making shapes using this pattern.

Shape	Number of Black Tiles	Number of Red Tiles	Total Number of Tiles
3×3	1	8	9
4×4	4	12	16
5×5	9	16	25

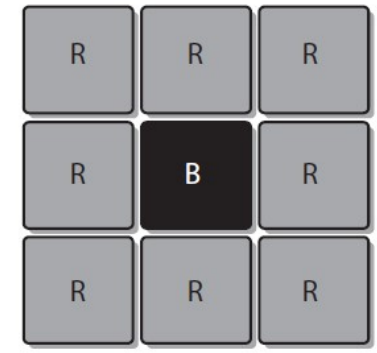
Pat made a shape with a total of 64 tiles. How many were black and how many were red?

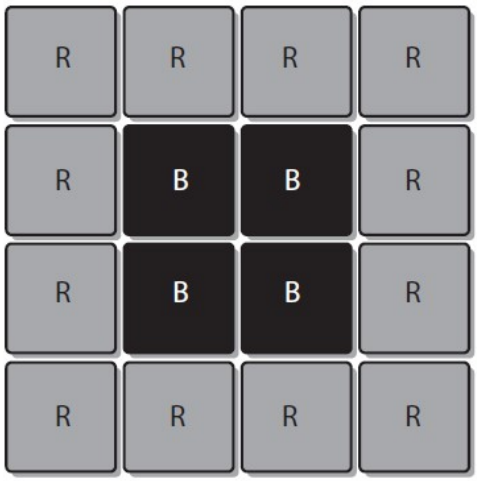
M032760B

Pat has red tiles and black tiles. Pat uses the tiles to make square shapes.

The 3×3 shape has 1 black tile and 8 red tiles.

The 4×4 shape has 4 black tiles and 12 red tiles.





The table below shows the number of tiles for the first three shapes Pat made. Pat continued making shapes using this pattern.

Shape	Number of Black Tiles	Number of Red Tiles	Total Number of Tiles
3×3	1	8	9
4×4	4	12	16
5×5	9	16	25

Pat made a shape that used 49 black tiles.

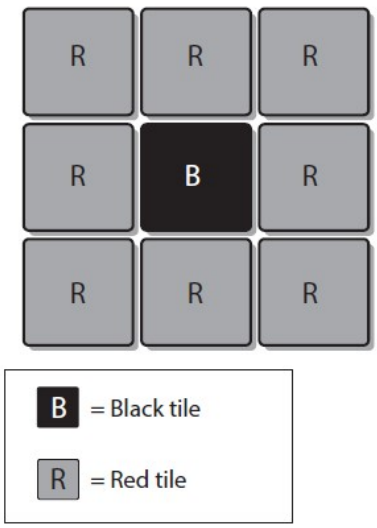
How many red tiles did Pat use in that shape?

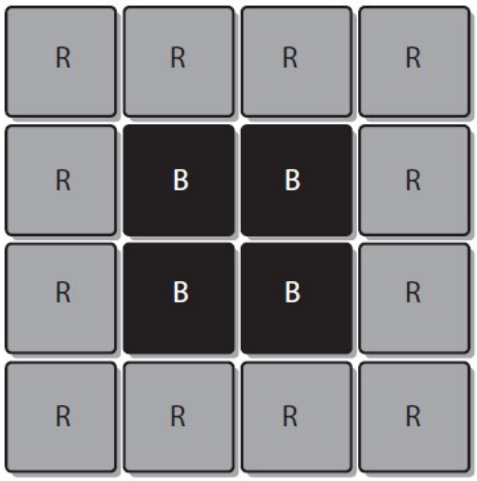
M032760C

Pat has red tiles and black tiles. Pat uses the tiles to make square shapes.

The 3×3 shape has 1 black tile and 8 red tiles.

The 4×4 shape has 4 black tiles and 12 red tiles.





The table below shows the number of tiles for the first three shapes Pat made. Pat continued making shapes using this pattern.

Shape	Number of Black Tiles	Number of Red Tiles	Total Number of Tiles
3×3	1	8	9
4×4	4	12	16
5×5	9	16	25

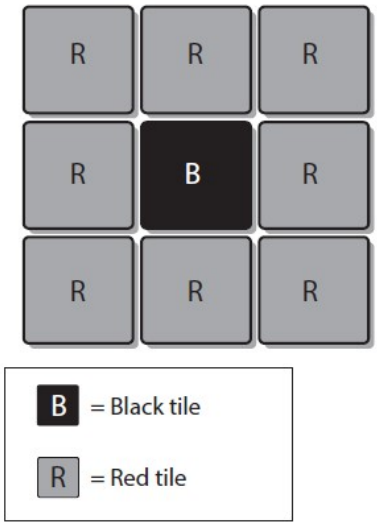
Next, Pat made a shape using 44 of the red tiles. How many black tiles would Pat need to complete the black part of the shape?

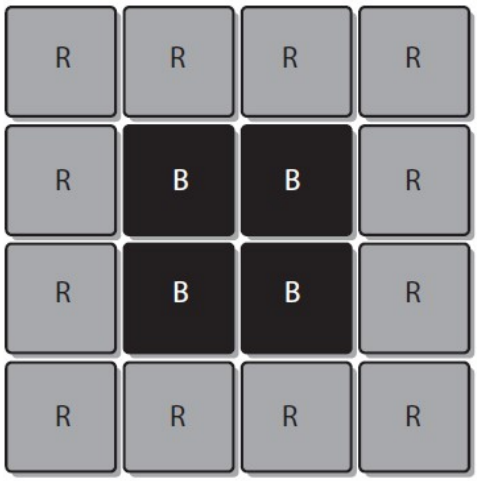
M032761

Pat has red tiles and black tiles. Pat uses the tiles to make square shapes.

The 3×3 shape has 1 black tile and 8 red tiles.

The 4×4 shape has 4 black tiles and 12 red tiles.





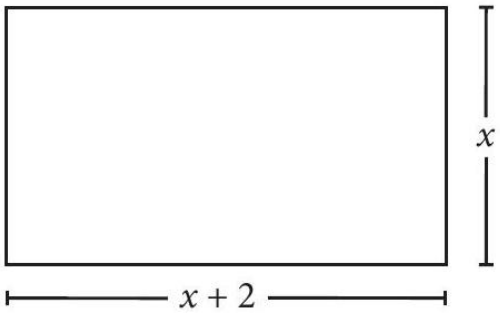
The table below shows the number of tiles for the first three shapes Pat made. Pat continued making shapes using this pattern.

Shape	Number of Black Tiles	Number of Red Tiles	Total Number of Tiles
3×3	1	8	9
4×4	4	12	16
5×5	9	16	25

Pat wanted to add a line to the table showing how to find the number of tiles needed to make a square of any size. Complete the line for shape $n \times n$ in the table below.

Shape	Number of Black Tiles	Number of Red Tiles	Total Number of Tiles
$n \times n$	$(n-2)^2$		

M042067



What is the area of this rectangle?

[A] $x^2 + 2$

[B] $x^2 + 2x$

[C] $2x + 2$

[D] $4x + 4$

M042077

Which expression is equivalent to $4(3 + x)$?

[A] $12 + x$

[B] $7 + x$

[C] $12 + 4x$

[D] $12x$

M042086

$a + b = 25$.

What is the value of $2a + 2b + 4$?

M042103

Solve this inequality.

$9x - 6 < 4x + 4$

M042198A

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$$

What is the next term in this pattern?

M042198B

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$$

What would term number 100 be?

M042198C

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$$

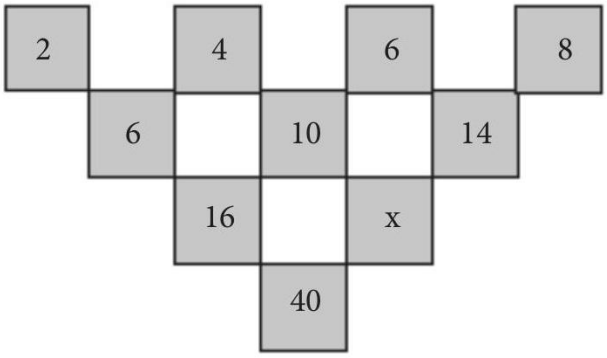
What would term number n be?

M042226

$k = 7$ and $l = 10$.

What is the value of P when $P = \frac{3kl}{5}$?

M042228



What is the value of x in this pattern?

M042235

$x + y = 12$ and $2x + 5y = 36$.

What are the values of x and y ?

[A] $x = 2, y = 10$

[B] $x = 4, y = 8$

[C] $x = 6, y = 6$

[D] $x = 8, y = 4$

M042236

Which of these is equal to $3p^2 + 2p + 2p^2 + p$?

[A] $8p$

[B] $8p^2$

[C] $5p^2 + 3p$

[D] $7p^2 + p$

M042245

$(0, -1), (1, 3)$

Which equation is satisfied by BOTH of these pairs of numbers (x, y) ?

[A] $x + y = -1$

[B] $2x + y = 5$

[C] $3x - y = 0$

[D] $4x - y = 1$

M052002

A piece of wood was 40 cm long.

It was cut into 3 pieces.

The lengths in cm are

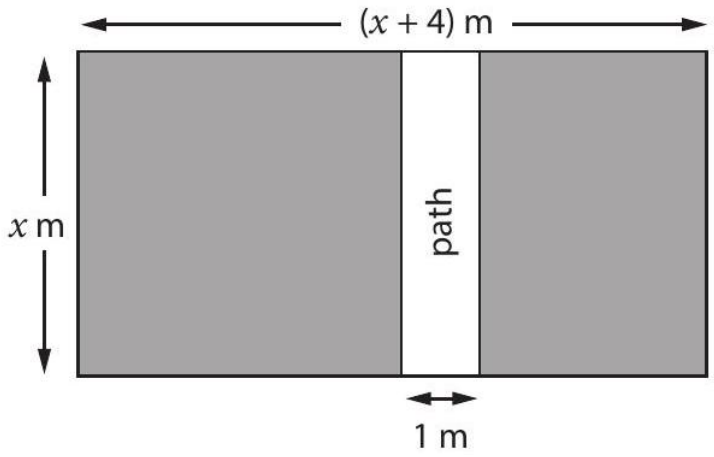
$2x - 5$

$x + 7$

$x + 6$

What is the length of the longest piece?

M052173



This is a diagram of a rectangular garden.

The white area is a rectangular path that is 1 meter wide.

Which expression shows the area of the shaded portion of the garden in m^2 ?

[A] $x^2 + 3x$

[B] $x^2 + 4x$

[C] $x^2 + 4x - 1$

[D] $x^2 + 3x - 1$

M052302

$y = \frac{a+b}{c}$

$a = 8, b = 6$, and $c = 2$

What is the value of y ?

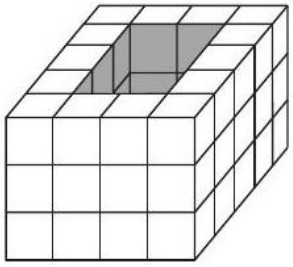
[A] 7

[B] 10

[C] 11

[D] 14

M032100



The figure above shows a shape made up of cubes that are all the same size. There is a hole all the way through the shape. How many cubes would be needed to fill the hole?

[A] 6

[B] 12

[C] 15

[D] 18

M032116

The area of a square is 144 cm^2. What is the perimeter of the square?

[A] 12 cm

[B] 48 cm

[C] 288 cm

[D] 576 cm

M032324

Points A, B, and C lie on a line and B is between A and C. If $AB = 10$ cm and $BC = 5.2$ cm, what is the distance between the midpoints of AB and BC ?

[A] 2.4 cm

[B] 2.6 cm

[C] 5.0 cm

[D] 7.6 cm

M032331

How many degrees does a minute hand of a clock turn through from 6:20 a.m. to 8:00 a.m. on the same day?

[A] 680°

[B] 600°

[C] 540°

[D] 420°

M032397

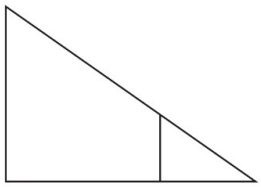


Figure 1

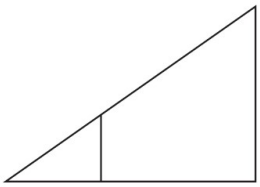


Figure 2

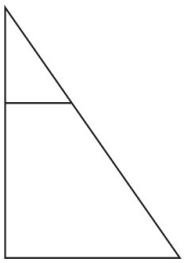


Figure 3

Which of these transformations, taken in order, can be used so that Figure 1 above becomes Figure 2 and then Figure 3?

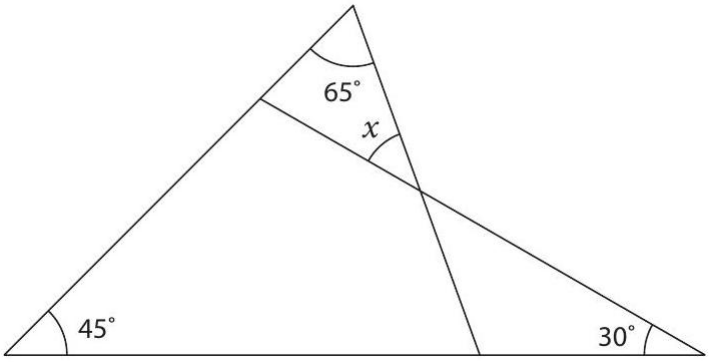
[A] reflection and then translation

[B] reflection and then $\frac{1}{4}$ turn rotation clockwise

[C] $\frac{1}{2}$ turn rotation and then translation

[D] $\frac{1}{4}$ turn rotation counterclockwise and then reflection

M032398



In the figure above, what is the value of x ?

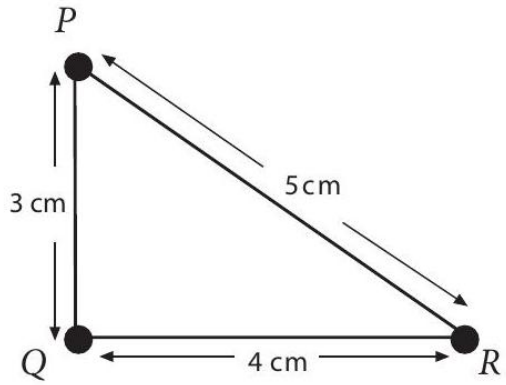
[A] 30°

[B] 40°

[C] 45°

[D] 65°

M032402



Which of these is the reason that triangle PQR is a right angle triangle?

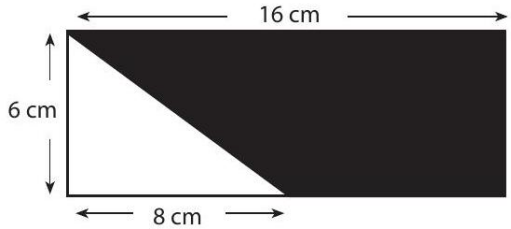
[A] $3^2 + 4^2 = 5^2$

[B] $5 < 3 + 4$

[C] $3 + 4 = 12 - 5$

[D] $3 > 5 - 4$

M032623



In the figure above, what is the area of the shaded region in cm^2 ?

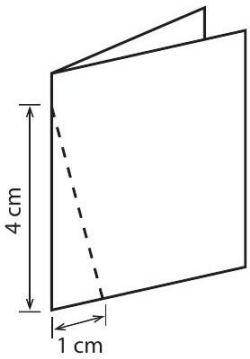
[A] 24

[B] 44

[C] 48

[D] 72

M032679



A piece of paper in the shape of a rectangle is folded in half as shown in the figure above. It is then cut along the dotted line, and the small piece that is cut is opened. What is the shape of the cutout figure?

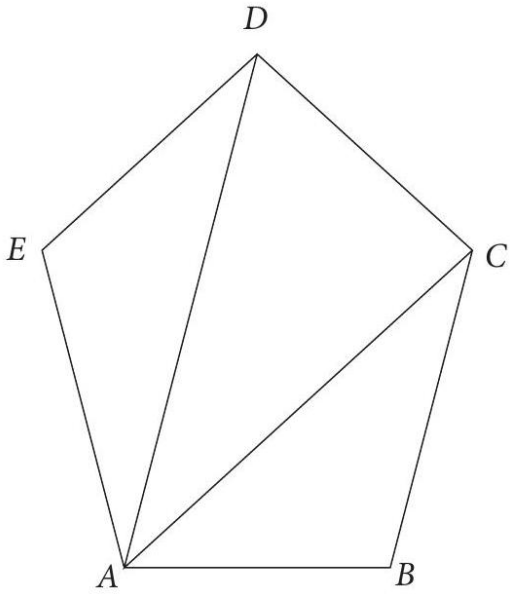
[A] an isosceles triangle

[B] two isosceles triangles

[C] a right triangle

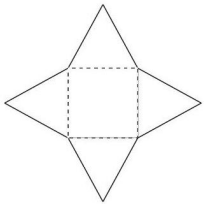
[D] an equilateral triangle

M032692



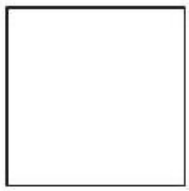
What is the sum of all the interior angles of pentagon $ABCDE$? Show your work.

M032734



The shape shown above is cut out of cardboard. The triangle flaps are then folded up along the dotted lines until they touch the edges of the flaps next to them.

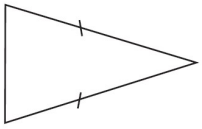
Complete the diagram below to show what the shape would look like when viewed from directly above.

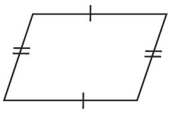


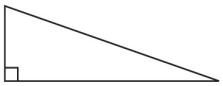
M042150

Which shape has a line of symmetry?

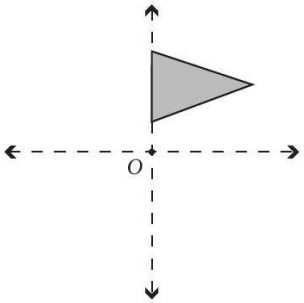
A. 

B. 

C. 

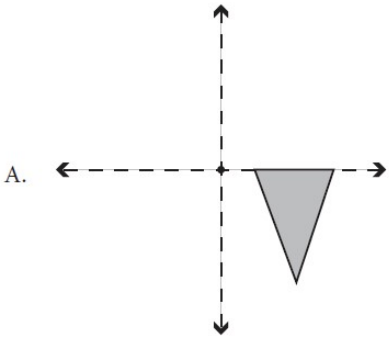
D. 

M042152

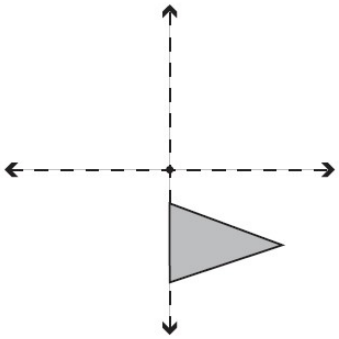


Which of these shows the result of a half-turn clockwise around point O ?

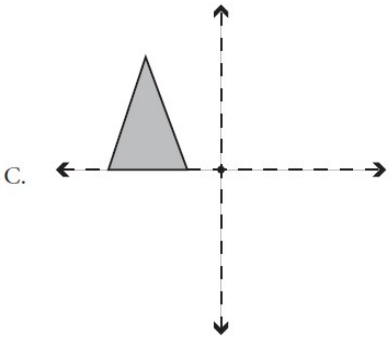
A.



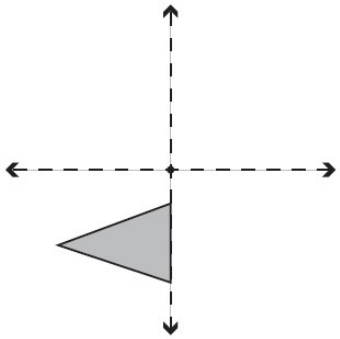
B.



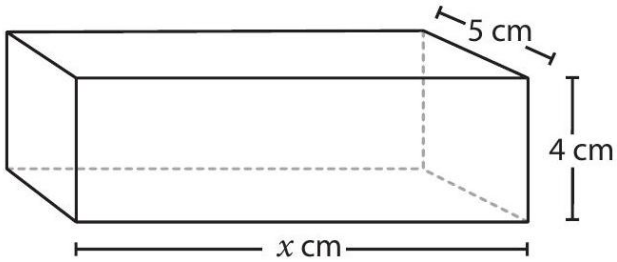
C.



D.



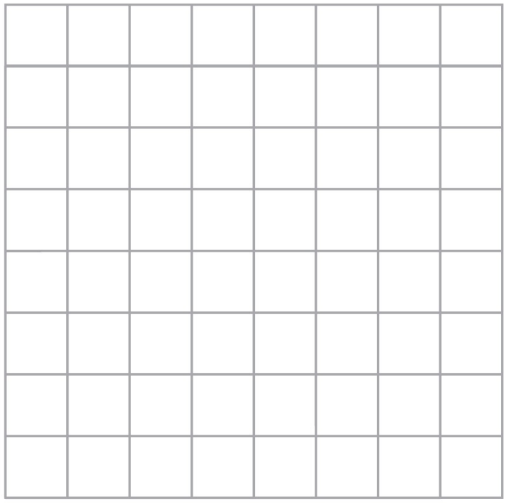
M042201



The volume of the rectangular box is 200 cm^3. What is the value of x ?

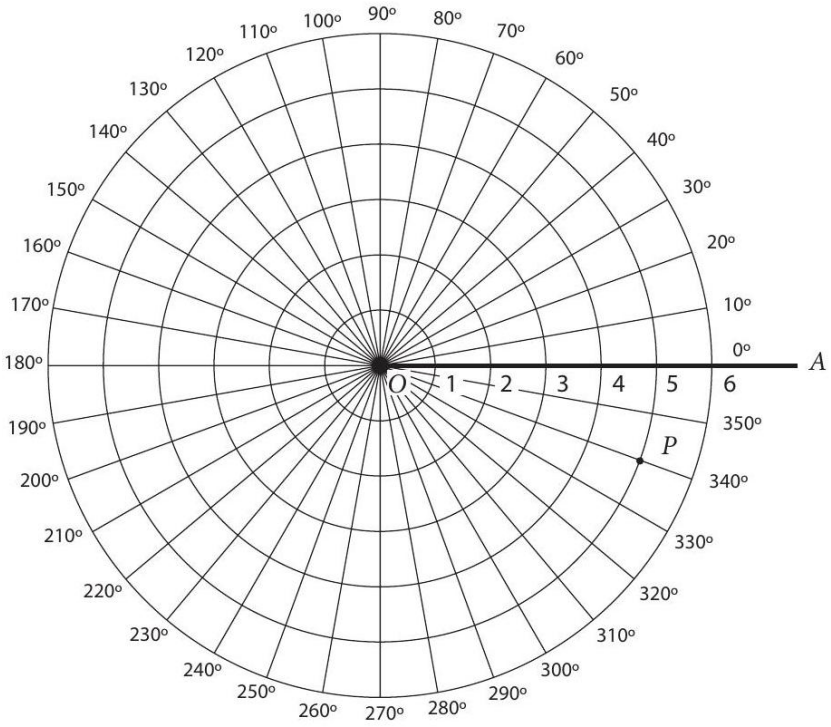
M042270

The length of side of each of the small squares represents 1 cm. Draw an isosceles triangle with a base of 4 cm and a height of 5 cm.



M042300Z

The diagram shows a system for locating points



In this system, the position of a point P is described by its distance from origin, O, and the amount of counterclockwise turn from a baseline OA to OP. Thus, the coordinates of P are $(5, 340°)$.

1. Mark the points $B\,(3, 30°)$ and $C\,(4, 120°)$ on the graph above.

2. Draw the angle BOC. What is the measure of angle BOC ?

Angle $BOC =$ _____°

M052084

The perimeter of a square is 36 cm.

What is the area of this square?

[A] 81 cm^2

[B] 36 cm^2

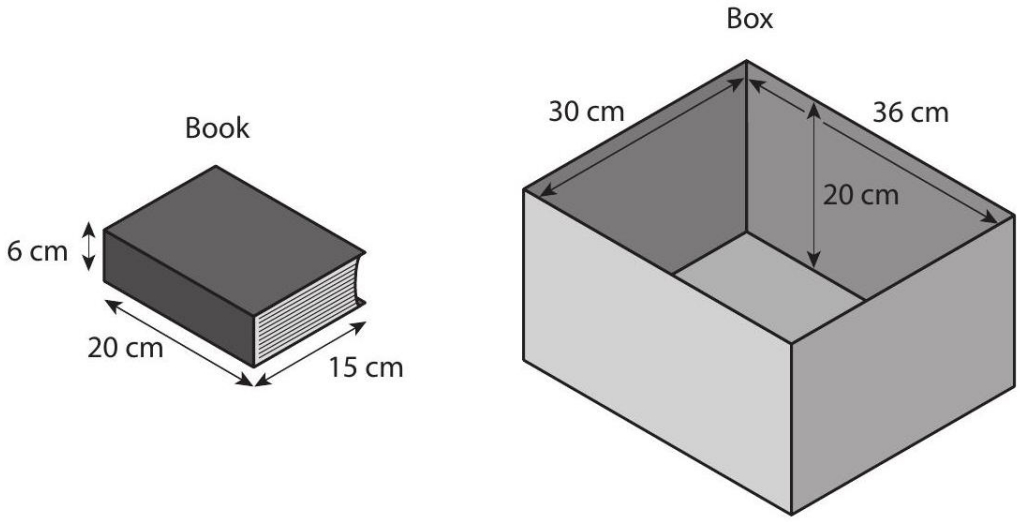
[C] 24 cm^2

[D] 18 cm^2

M052206

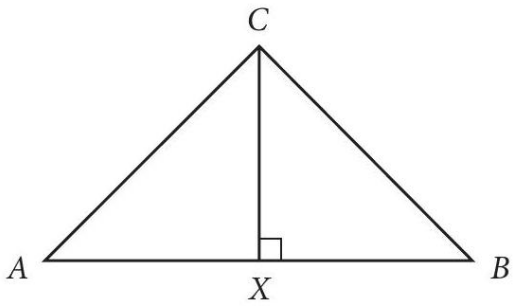
Ryan is packing books into a rectangular box.

All the books are the same size.



What is the largest number of books that will fit inside the box?

M052362



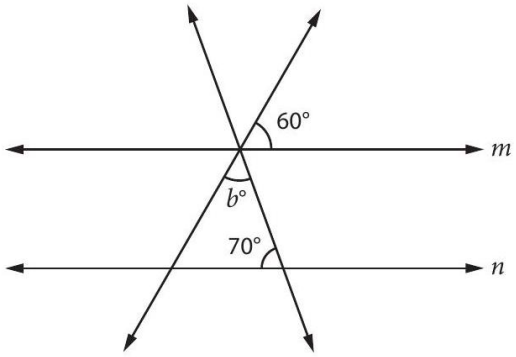
In this triangle:

$AC = BC$

AB is twice as long as CX.

What is the size of angle B ?

M052408



Lines m and n are parallel.

What is the value of b ?

M032132

A machine has 100 candies and dispenses a candy when a lever is turned. The machine has the same number of blue, pink, yellow, and green candies all mixed together. Megan turned the lever and obtained a pink candy. Peter turned the lever next.

How likely is it that Peter will get a pink candy?

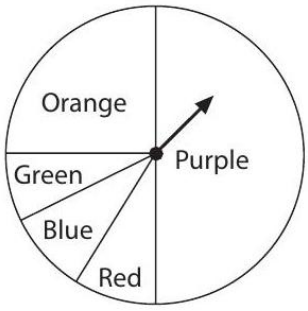
[A] It is certain that his candy will be pink.

[B] It is more likely than it was for Megan.

[C] It is exactly as likely as it was for Megan.

[D] It is less likely than it was for Megan.

M032507



The spinner is for Steve's new game. Out of 600 spins, approximately how many times should he expect the arrow to land on the red sector?

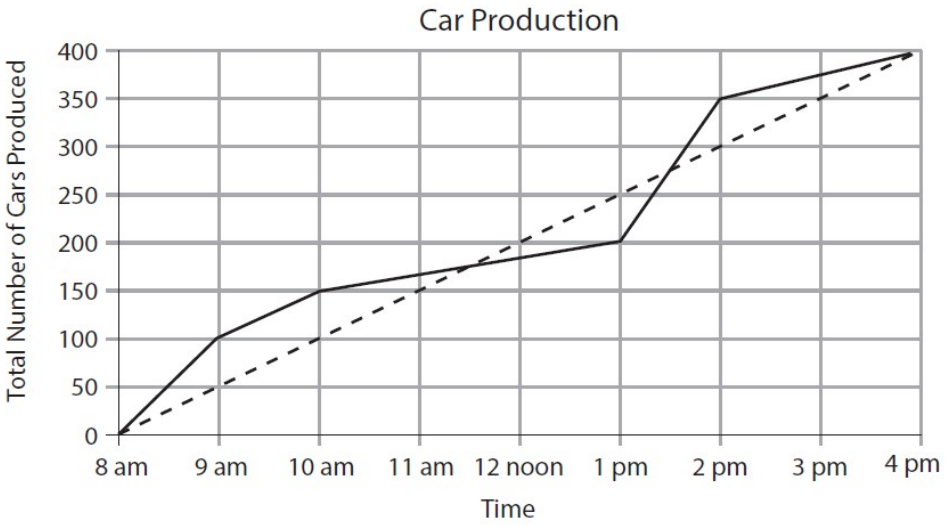
[A] 30

[B] 40

[C] 50

[D] 60

M032681A

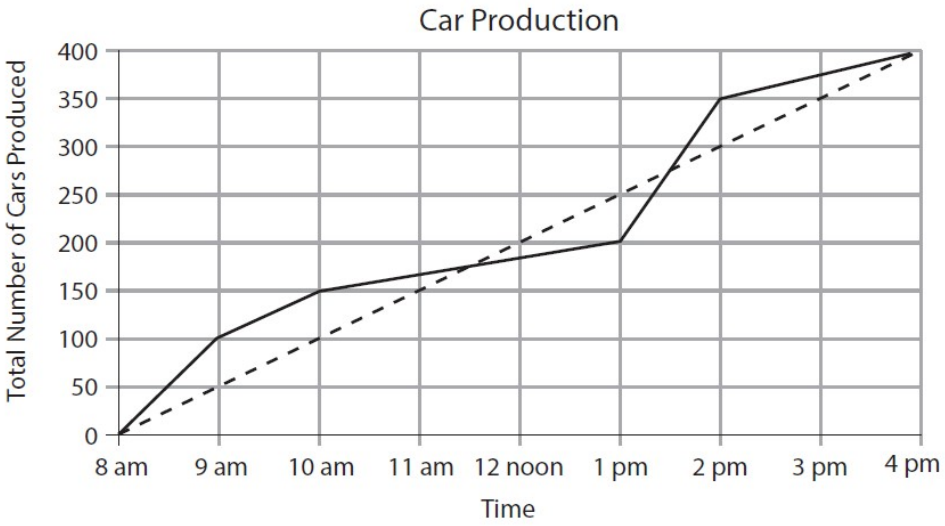


The solid line (————) on the graph shows car production by the NU Car Motor Company during a particular day.

The dotted line (- - - - -) shows what the total number of cars produced would be if the rate of production were constant.

By what time had a total of 150 cars been produced?

M032681B

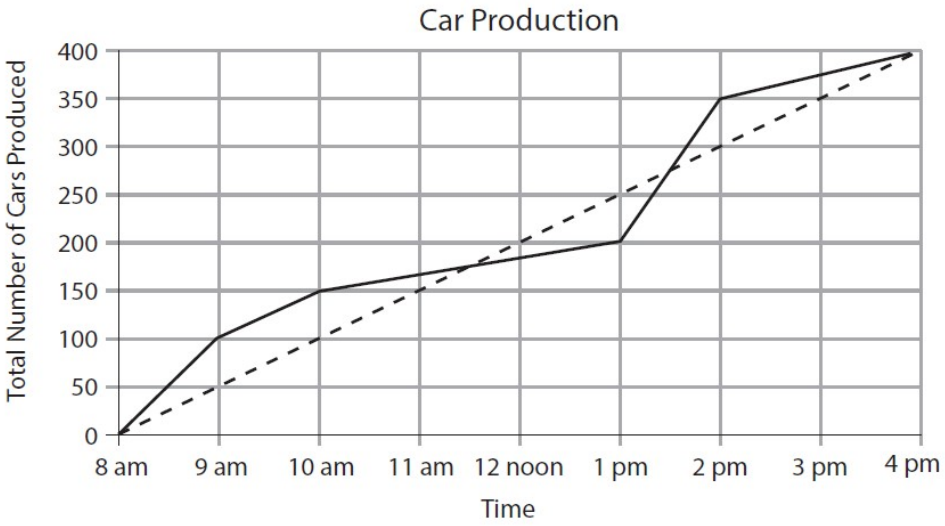


The solid line (————) on the graph shows car production by the NU Car Motor Company during a particular day.

The dotted line (- - - - -) shows what the total number of cars produced would be if the rate of production were constant.

What was the average number of cars produced per hour on this day?

M032681C



The solid line (————) on the graph shows car production by the NU Car Motor Company during a particular day.

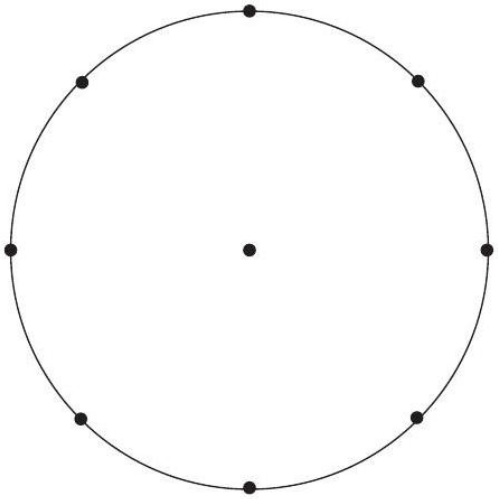
The dotted line (- - - - -) shows what the total number of cars produced would be if the rate of production were constant.

During which hour were the most cars produced?

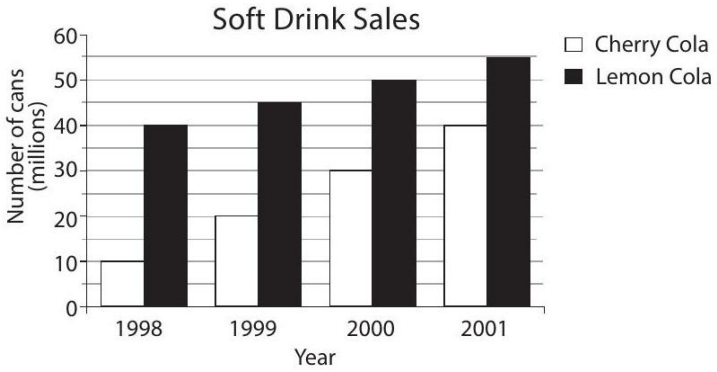
M032695

Of the 400 students in a school, 50 plan to go to university, 100 to a polytechnic school, 150 to a business college, and the remainder plan to enter workforce.

Use the circle below to make a pie chart showing the proportions of students planning to do each of these. Put labels on your chart.



M032721



The graph shows the sales of two types of soft drink over 4 years. If the sales trends continue for the next 10 years, determine the year in which the sales of Cherry Cola will be the same as the sales of Lemon Cola.

[A] 2003

[B] 2004

[C] 2005

[D] 2006

M042169A

The Real Burger Company owns 5 restaurants. The numbers of staff members employed in its 5 restaurants are: $12, 18, 19, 21$, and 30 people.
What is the mean number of staff members in the 5 restaurants?

M042169B

The Real Burger Company owns 5 restaurants. The numbers of staff members employed in its 5 restaurants are: $12, 18, 19, 21$, and 30 people.

What is the median number of staff members in the 5 restaurants?

M042169C

The Real Burger Company owns 5 restaurants. The numbers of staff members employed in its 5 restaurants are: 12, 18, 19, 21, and 30 people.
If the restaurant with 30 staff members increased its number of staff members to 50 , how would this affect the median and the mean?

M042177

Over recent weeks, a shop's average sales of bottles of soda have been 50% in the regular size, 40% in the small size, and 10% in the large size. Next week, the shopkeeper will order 1,200 bottles of soda. How many of these bottles should he order in the regular size?

[A] 120

[B] 480

[C] 600

[D] 720

M042179

There are 10 red, 8 blue, and 4 white buttons in a bag. What is the chance of taking out either a blue button or a white button?

[A] $\frac{4}{22}$

[B] $\frac{8}{22}$

[C] $\frac{10}{22}$

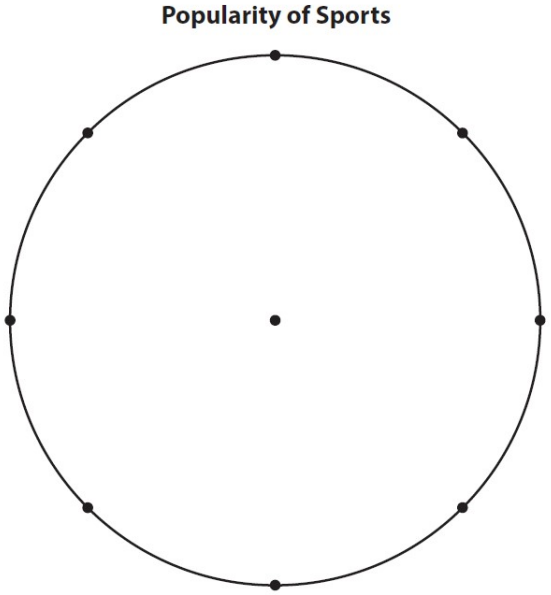
[D] $\frac{12}{22}$

M042207

480 students were asked to name their favorite sport. The results are shown in this table.

Sport	Number of Students
Hockey	60
Football	180
Tennis	120
Basketball	120

Use the information in the table to complete and label this pie chart.



M042260

Pat and Chris were candidates for school president.

Here are the election results:

Pat	80%
Chris	20%

How likely would it be for a student asked at random to have voted for Pat?

[A] It is certain that the student voted for Pat.

[B] It is likely that the student voted for Pat.

[C] It is unlikely that the student voted for Pat.

[D] It is certain that the student did not vote for Pat.

M042269

The results of a long jump competition were reported as follows:

Average Length

Team A 3.6 m

Team B 4.8 m

There were the same number of students in each team.

Which statement about the competition MUST be true?

[A] Each student in team B jumped farther than any student in team A.

[B] After every student in team A jumped, there was a student in team B who jumped farther.

[C] As a group, team B jumped farther than team A.

[D] Some students in team A jumped farther than some students in team B.

M052429

There are 10 marbles in a bag: 5 red, and 5 blue.

Sue draws a marble from the bag at random. The marble is red.

She puts the marble back into the bag.

What is the probability that the next marble she draws at random is red?

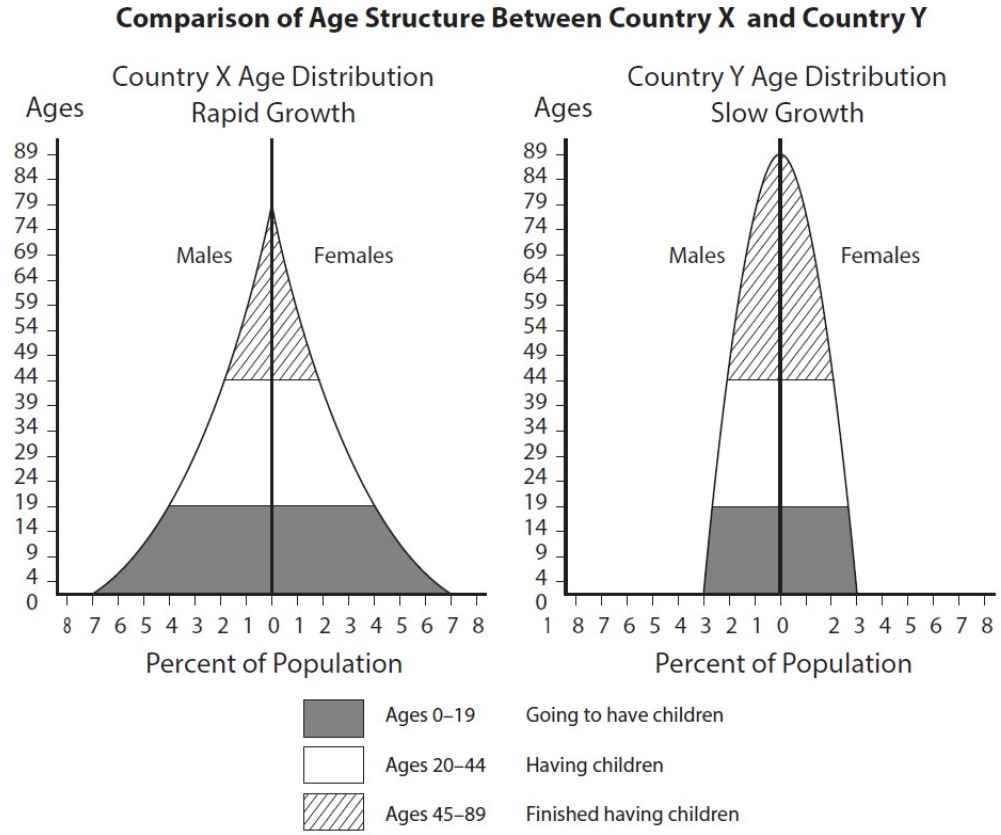
[A] $\frac{1}{2}$

[B] $\frac{4}{10}$

[C] $\frac{1}{5}$

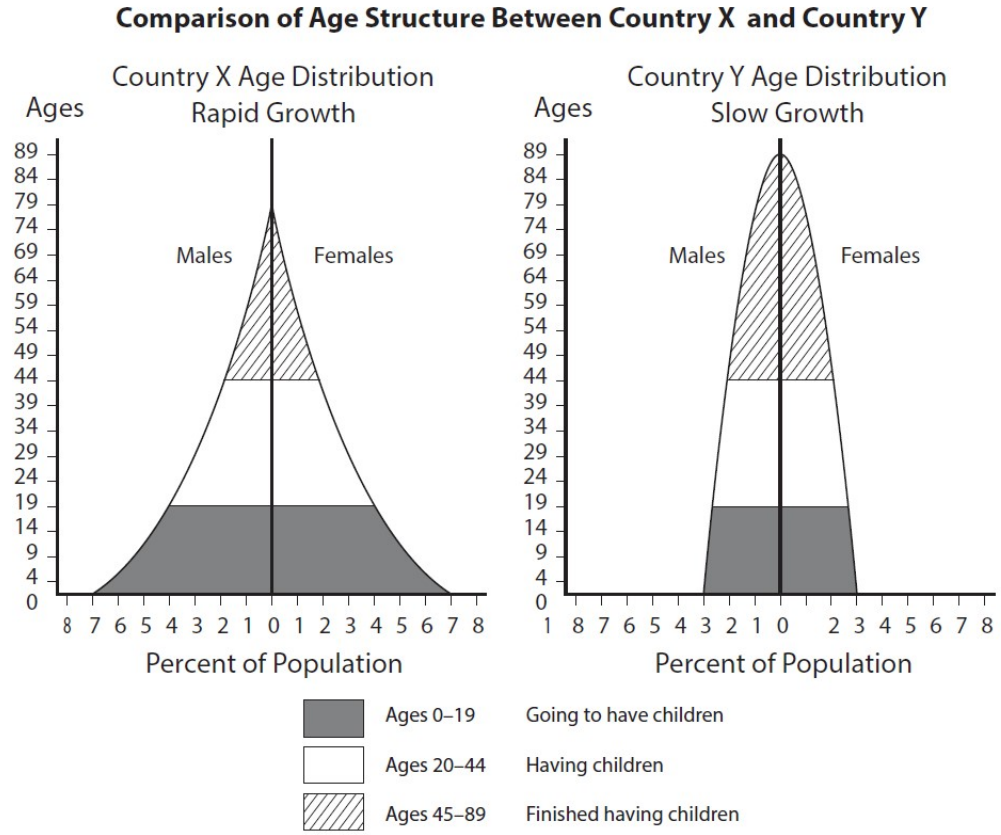
[D] $\frac{1}{10}$

M052503A



The graphs for Country X and Country Y show the age structure of each country's population. The population is divided into three age groups from youngest to oldest. The graphs enable predictions about population growth. Why could the age structure of Country X lead to more rapid population growth than the age structure of Country Y?

M052503A



The graphs for Country X and Country Y show the age structure of each country's population. The population is divided into three age groups from youngest to oldest. The graphs enable predictions about population growth. Why could Country Y expect to have a bigger problem taking care of its elderly population than Country X?