PURDUE UNIVERSITY®

Indiana Academic M.A.T.H. Bowl

Begin Practice Round

$$20 + 20 = ?$$

A. 20

B. 22

C. 0

D. 40

30 second timer has started

20 + 20 = ?

A. 20

B. 22

C. 0

D. 40

5 seconds

Time is up.

2022 M.A.T.H. Area

Practice Round

$$20 + 20 = ?$$

D. 40

End Practice Round

Begin Round 1

30 seconds

Round 1,849 to the nearest thousand.

A. 100
B. 200
C. 1,000
D. 2,000

2022 M.A.T.H. Area
Round 1, Question 1

30 second timer has started

Round 1,849 to the nearest thousand.

A. 100
B. 200
C. 1,000
D. 2,000

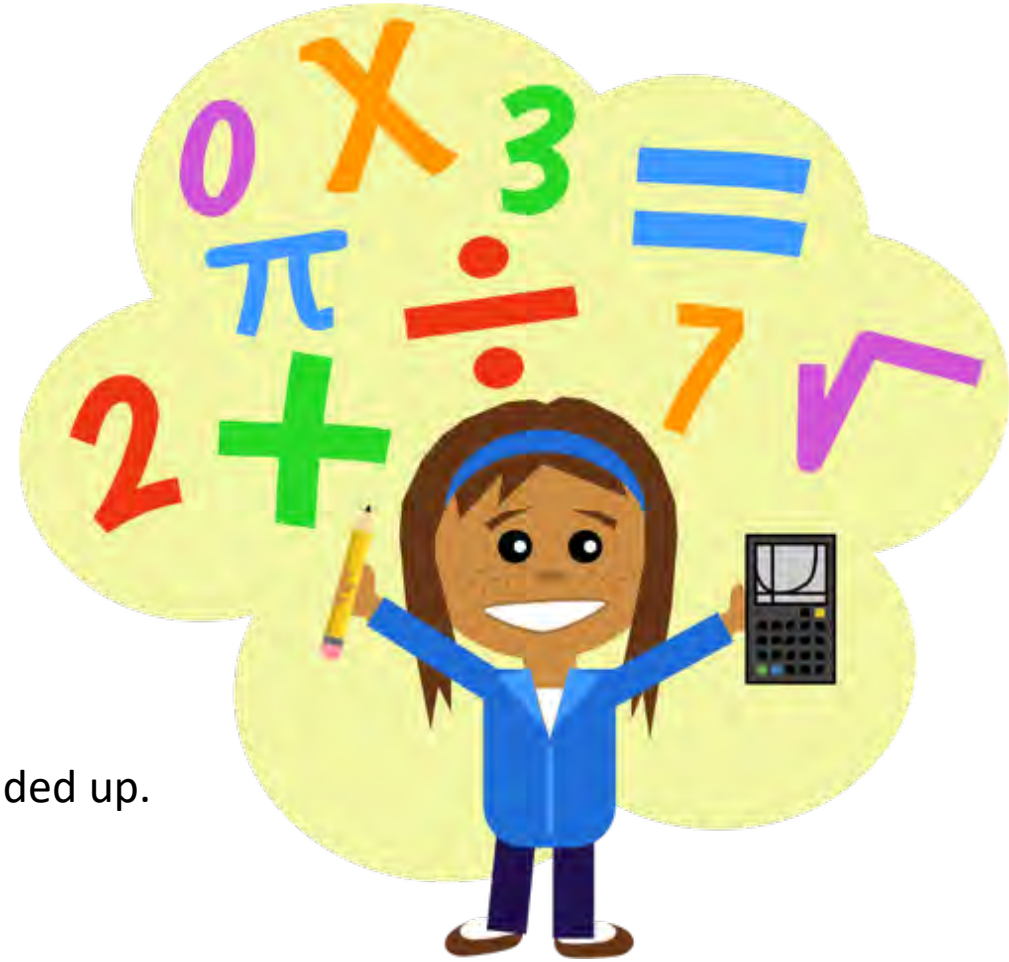
5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 1

Round 1,849 to the nearest thousand.

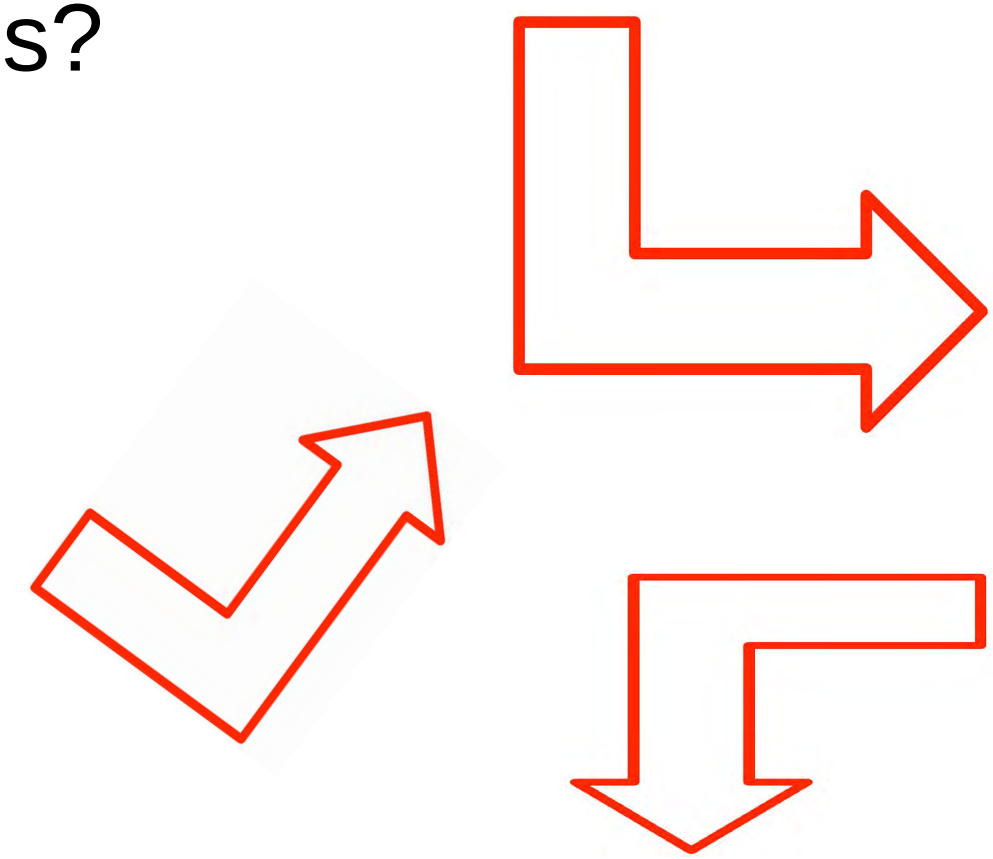
D. 2,000



The 8 in the hundred’s place is 5 or more.
So the 1 in the thousand’s place must be rounded up.

How many degrees are in the sum of the measures of three right angles?

A. 90 degrees
B. 180 degrees
C. 270 degrees
D. 360 degrees

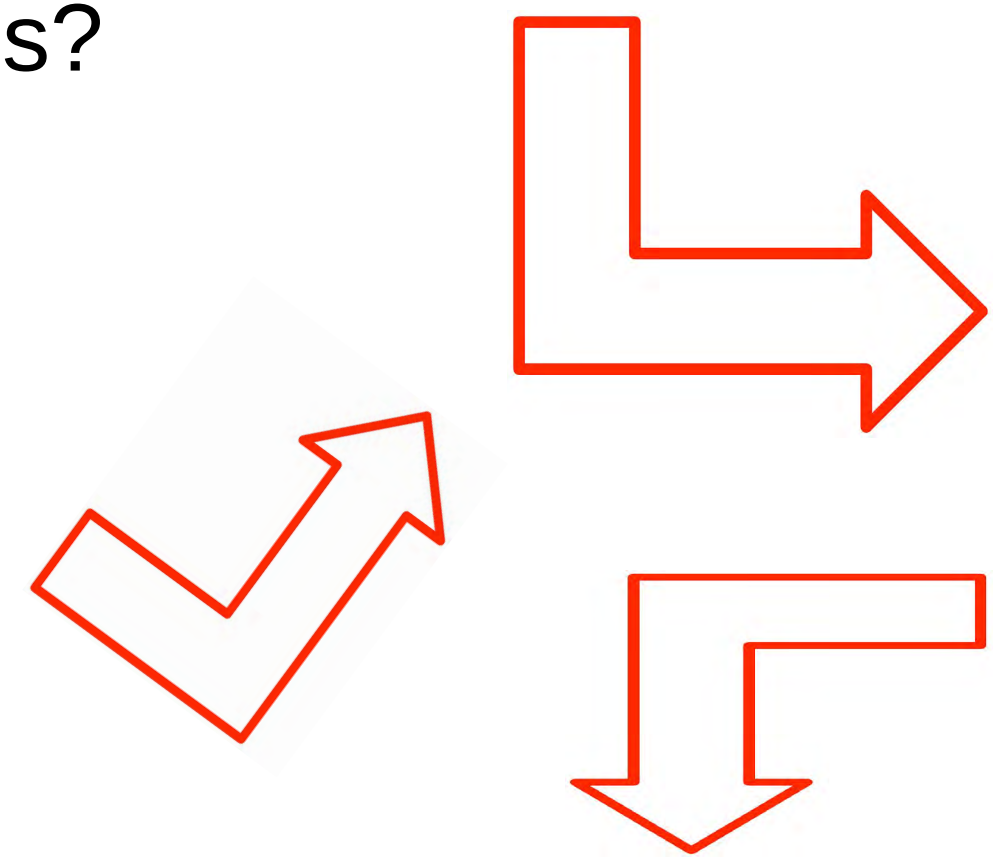


2022 M.A.T.H. Area
Round 1, Question 2

30 second timer has started

How many degrees are in the sum of the measures of three right angles?

A. 90 degrees
B. 180 degrees
C. 270 degrees
D. 360 degrees

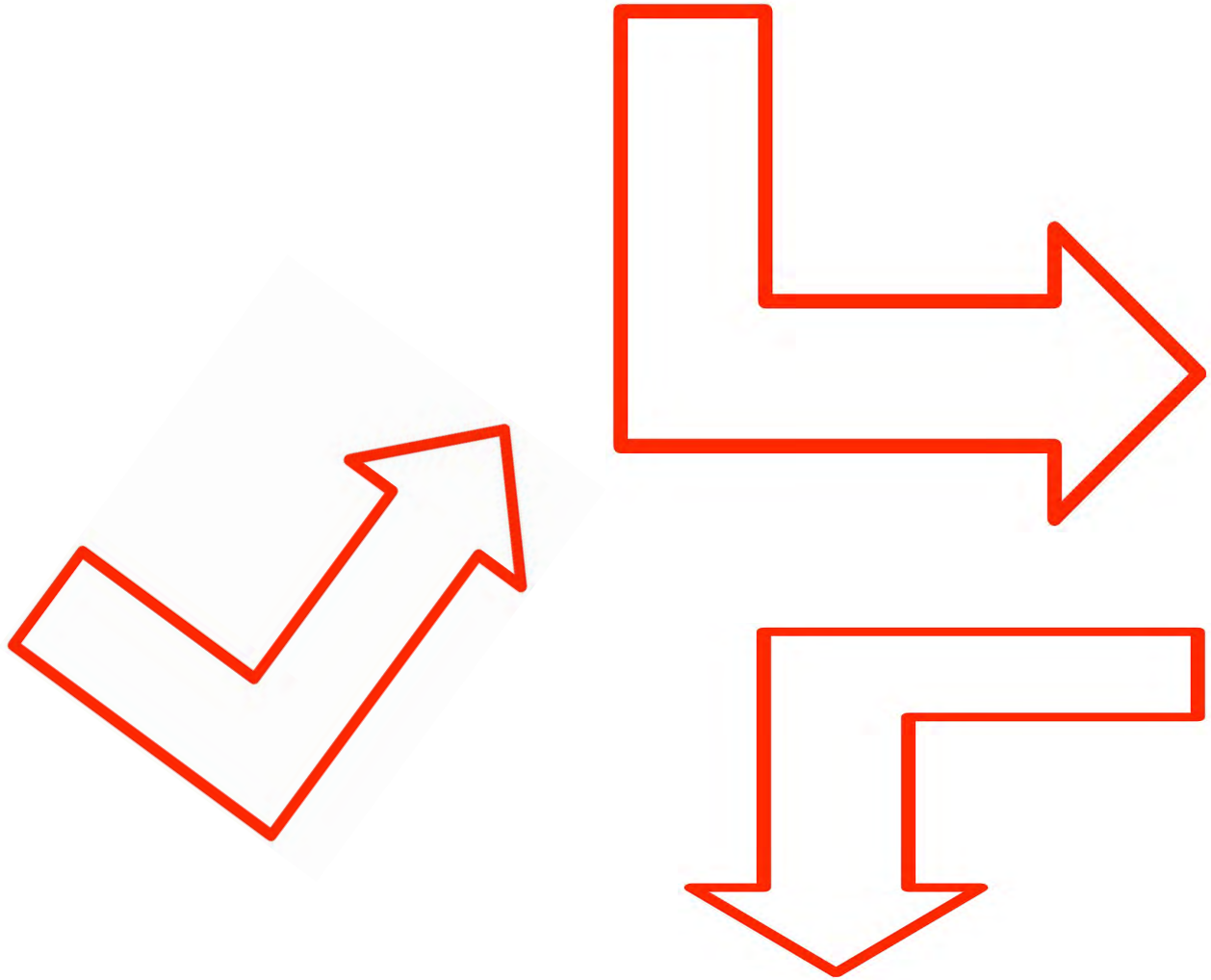


5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 2

How many degrees are in the sum of the measures of three right angles?



C. 270 degrees

Right angles have 90 degrees.

3 x 90 = 270

Some scientists speculate that periodical cicadas emerge every 13 and 17 years because those are prime numbers. It makes it difficult for predators to synchronize with them. Which group of numbers are all prime?

A. 5, 13, 17, 21, 29
B. 2, 13, 17, 39, 51
C. 2, 13, 17, 67, 73
D. 2, 13, 17, 57, 91

2022 M.A.T.H. Area
Round 1, Question 3

30 second timer has started

Some scientists speculate that periodical cicadas emerge every 13 and 17 years because those are prime numbers. It makes it difficult for predators to synchronize with them. Which group of numbers are all prime?

A. 5, 13, 17, 21, 29
B. 2, 13, 17, 39, 51
C. 2, 13, 17, 67, 73
D. 2, 13, 17, 57, 91

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 3

Some scientists speculate that periodical cicadas emerge every 13 and 17 years because those are prime numbers. It makes it difficult for predators to synchronize with them. Which group of numbers are all prime?

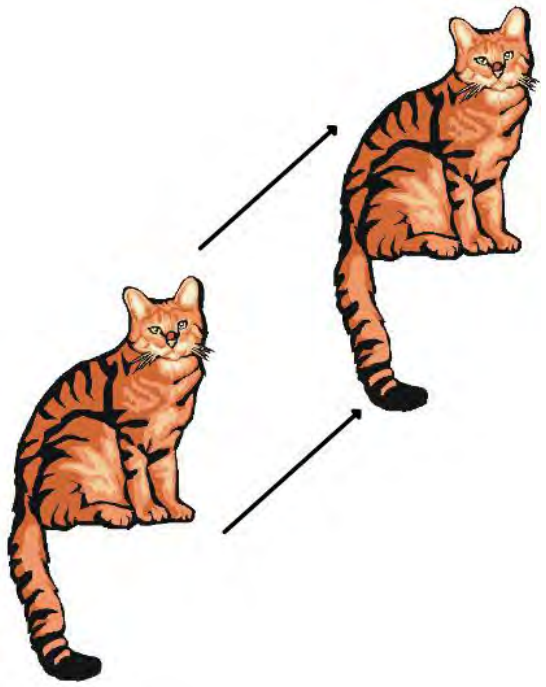
A. 5, 13, 17, 21, 29
B. 2, 13, 17, 39, 51
C. 2, 13, 17, 67, 73
D. 2, 13, 17, 57, 91

C. 2, 13, 17, 67, 73

21 is not prime in A
39 is not prime in B
57 is not prime in D
C contains all prime numbers

What type of transformation is shown if the shape on the left is the original and the shape on the right is the transformation?

A. Dilation
B. Reflection
C. Translation
D. Rotation

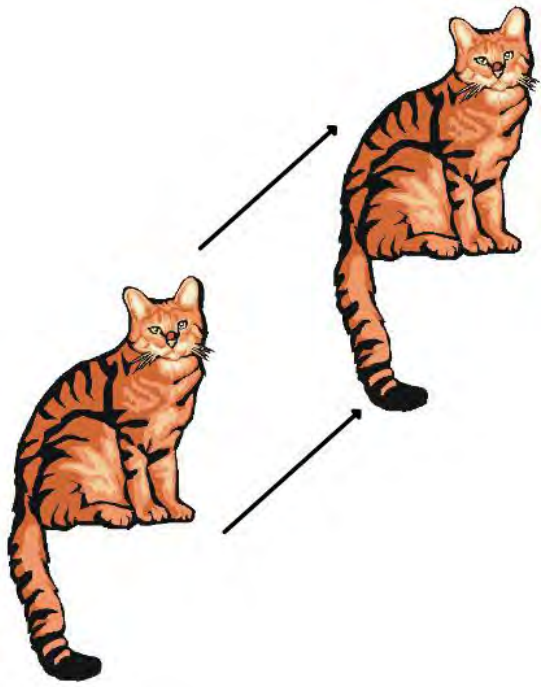


2022 M.A.T.H. Area
Round 1, Question 4

30 second timer has started

What type of transformation is shown if the shape on the left is the original and the shape on the right is the transformation?

A. Dilation
B. Reflection
C. Translation
D. Rotation

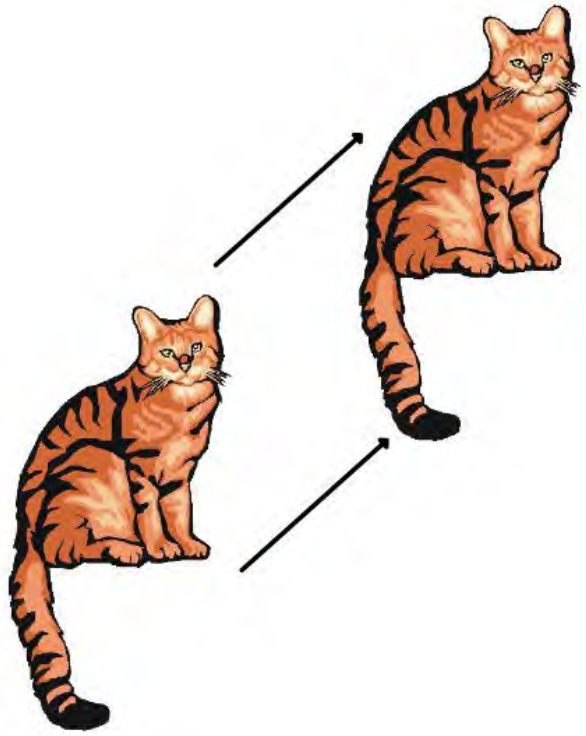


5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 4

What type of transformation is shown if the shape on the left is the original and the shape on the right is the transformation?



C. Translation

In Geometry, "Translation" simply means **Moving** ...
... without rotating, resizing or anything else, **just moving**.

A substitution of one or two squad members may be made during this time period.

This is not a time out.
Coaches may not use this time for last minute coaching.

Captains must remain at the table.

If the ratio of pencils to pens is 5:6, how many pens would be in a pile of 33 pencils and pens?

A. 15 pens
B. 18 pens
C. 29 pens
D. 24 pens

2022 M.A.T.H. Area
Round 1, Question 5

30 second timer has started

If the ratio of pencils to pens is 5:6, how many pens would be in a pile of 33 pencils and pens?

A. 15 pens
B. 18 pens
C. 29 pens
D. 24 pens

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 5

If the ratio of pencils to pens is 5:6, how many pens would be in a pile of 33 pencils and pens?

B. 18 pens

A. 15 pens gives us 18 pencils– 15/18 is 5/6 but question asks for number of pens
B. 18 pens gives us 15 pencils – same 5/6 as above but gives the number of pens
C. 29 pens gives us 4 pencils - 4/29 is not 5/6
D. 24 pens gives us 9 pencils – 9/24 is 3/8, not 5/6

60 seconds

The size of a bicycle tire is measured by its diameter. A bicycle that has 27-inch tires traveled 4 full rotations before coming to a stop. How far did the bike travel?

A. 28.26 ft
B. 339.12 ft
C. 113 ft
D. 108 in

2022 M.A.T.H. Area
Round 1, Question 6

60 second timer has started

The size of a bicycle tire is measured by its diameter. A bicycle that has 27-inch tires traveled 4 full rotations before coming to a stop. How far did the bike travel?

A. 28.26 ft
B. 339.12 ft
C. 113 ft
D. 108 in

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 6

The size of a bicycle tire is measured by its diameter. A bicycle that has 27-inch tires traveled 4 full rotations before coming to a stop. How far did the bike travel?

A. 28.26 ft

A tire travels its circumference.

$$C = \pi d$$
$$C = 3.14(27)$$
$$C = 84.78\ inches$$

4 rotations = 339.12 inches

Answers are given in feet
339.12 / 12 = 28.26 feet

Janelle sets her 13 foot ladder next to the wall as shown in the picture. The top is 12 feet from the floor. How far from the wall is the bottom of the ladder?

A. 5 ft
B. 8 ft
C. 1.5 ft
D. 16 ft

2022 M.A.T.H. Area
Round 1, Question 7

45 second timer has started

Janelle sets her 13 foot ladder next to the wall as shown in the picture. The top is 12 feet from the floor. How far from the wall is the bottom of the ladder?

A. 5 ft
B. 8 ft
C. 1.5 ft
D. 16 ft

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 7

Janelle sets her 13 foot ladder next to the wall as shown in the picture. The top is 12 feet from the floor. How far from the wall is the bottom of the ladder?

A. 5 ft

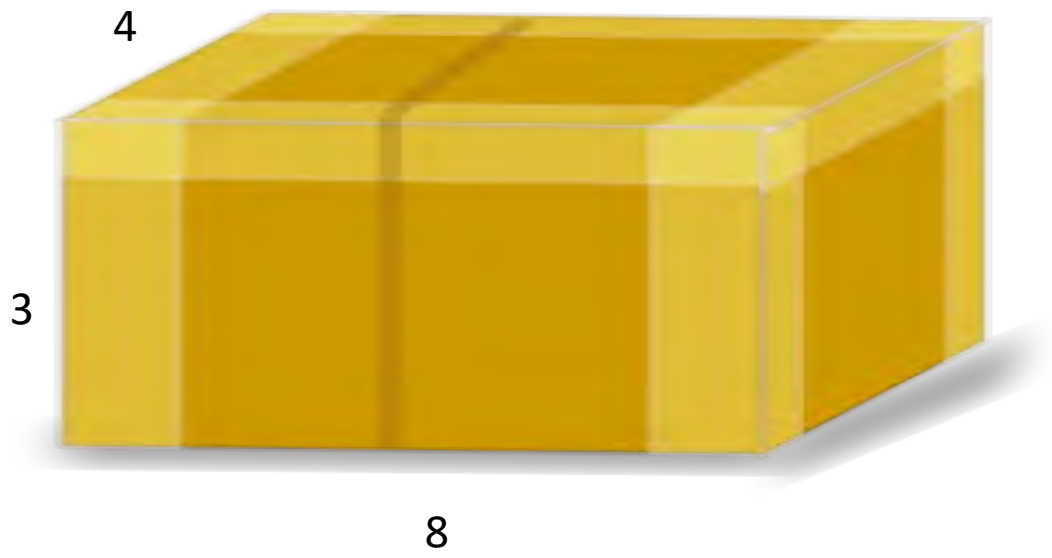
The ladder forms a right triangle.

$$a^2 + b^2 = c^2$$
$$12^2 + b^2 = 13^2$$
$$144 + b^2 = 169$$
$$b^2 = 25$$
$$b = 5$$

60 seconds

If a rectangular box is 3 inches high, 8 inches long and 4 inches wide, what is the total surface area?

A. 24 in²
B. 12 in²
C. 84 in²
D. 136 in²

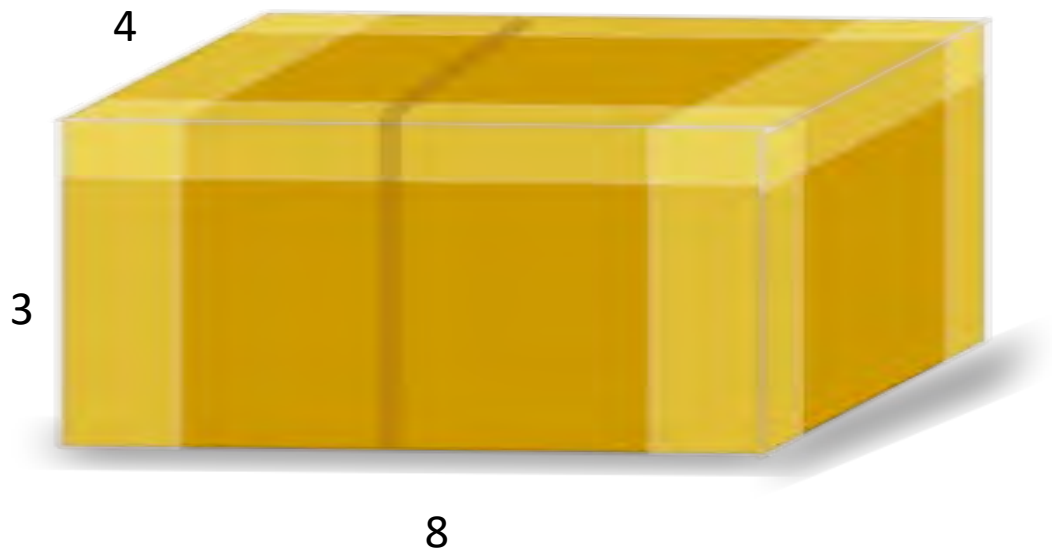


2022 M.A.T.H. Area
Round 1, Question 8

60 second timer has started

If a rectangular box is 3 inches high, 8 inches long and 4 inches wide, what is the total surface area?

A. 24 in²
B. 12 in²
C. 84 in²
D. 136 in²



5 seconds

Time is up.

2022 M.A.T.H. Area
Round 1, Question 8

If a rectangular box is 3 inches high, 8 inches long and 4 inches wide, what is the total surface area?

D. 136 in²

Surface area is the sum of the areas of each face.
The faces come in congruent pairs: top & bottom, front & back, left & right.

3 x 8 = 24 front and back
3 x 4 = 12 left and right
8 x 4 = 32 top and bottom

Adding all 6 sides gives 136

End
Round 1

Begin Round 2

30 seconds

A cheetah can run 102.6 feet in 1 second. How far can it run in 5 seconds?

A. 513 feet
B. 1 mile
C. 342 feet
D. 20.52 feet

2022 M.A.T.H. Area
Round 2, Question 1

30 second timer has started

A cheetah can run 102.6 feet in 1 second. How far can it run in 5 seconds?

A. 513 feet
B. 1 mile
C. 342 feet
D. 20.52 feet

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 1

A cheetah can run 102.6 feet in 1 second. How far can it run in 5 seconds?

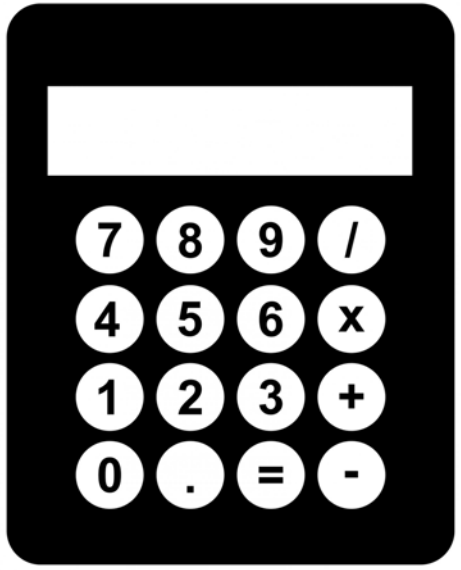
A. 513 feet

102.6 (5) = 513 feet

30 seconds

Find the greatest common factor of 30 and 54.

A. 3
B. 6
C. 9
D. 270

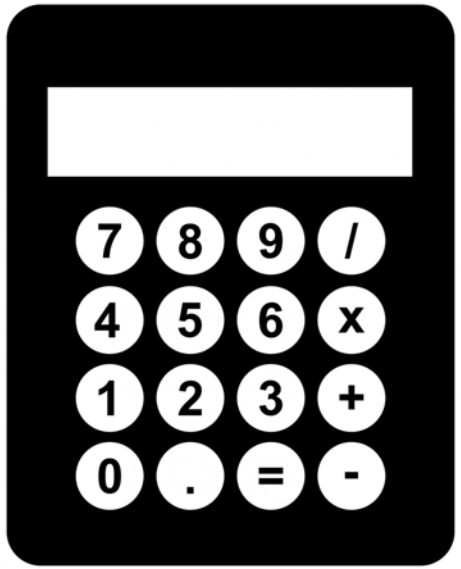


2022 M.A.T.H. Area
Round 2, Question 2

30 second timer has started

Find the greatest common factor of 30 and 54.

A. 3
B. 6
C. 9
D. 270



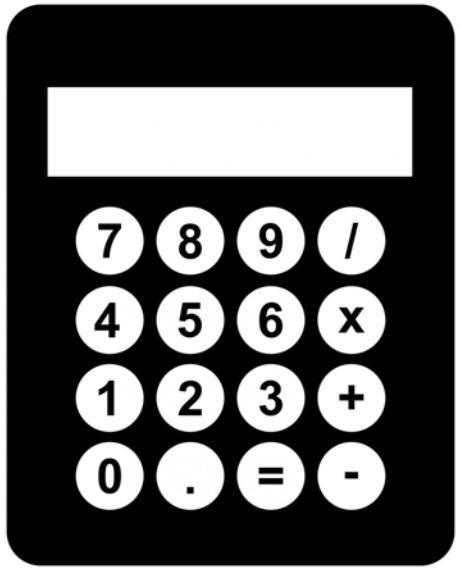
5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 2

Find the greatest common factor of 30 and 54.

B. 6



30 is divisible by 1, 2, 3, 5, 6, 10, 15, 30
54 is divisible by 1, 2, 3, 6, 9, 18, 27, 54

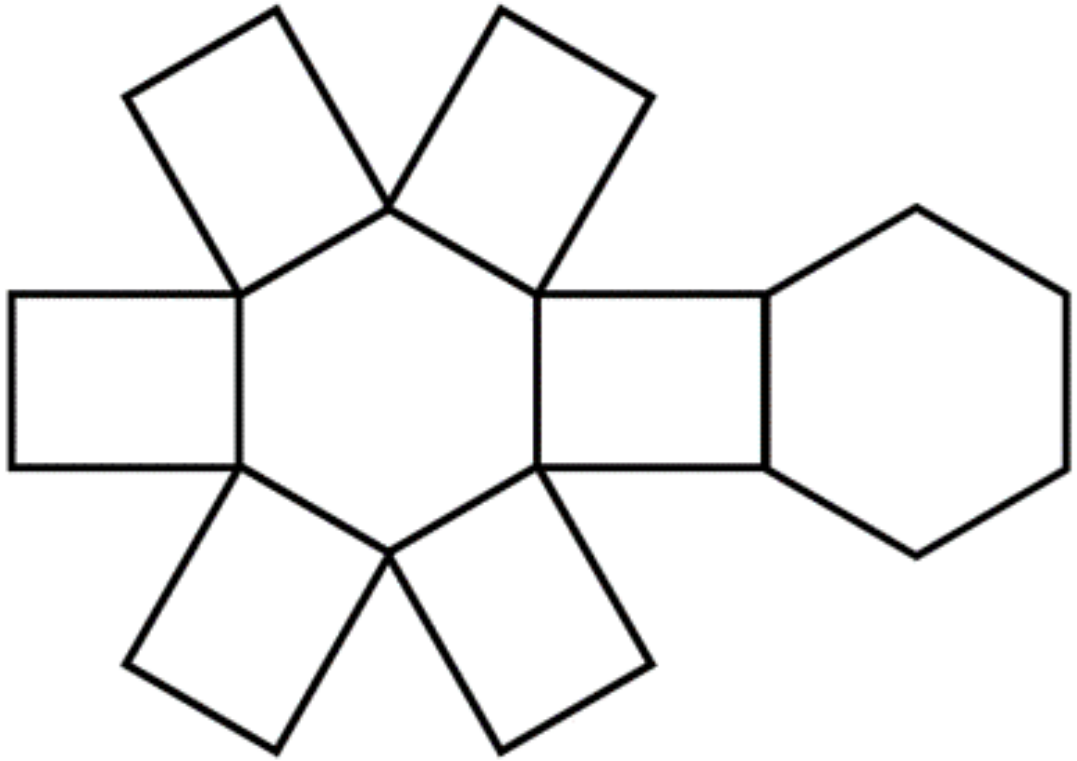
30 is divisible by 1, 2, 3, 5, 6, 10, 15, 30
54 is divisible by 1, 2, 3, 6, 9, 18, 27, 54

The common factors are 1, 2, 3, and 6.
6 is the greatest of the common factors.

30 seconds

This net can be folded into a three dimensional geometric shape with 8 faces, 18 edges, and 12 vertices. Which is the best name for the folded shape?

A. Tetrahedron
B. Hexagonal prism
C. Triangular prism
D. Hexagon

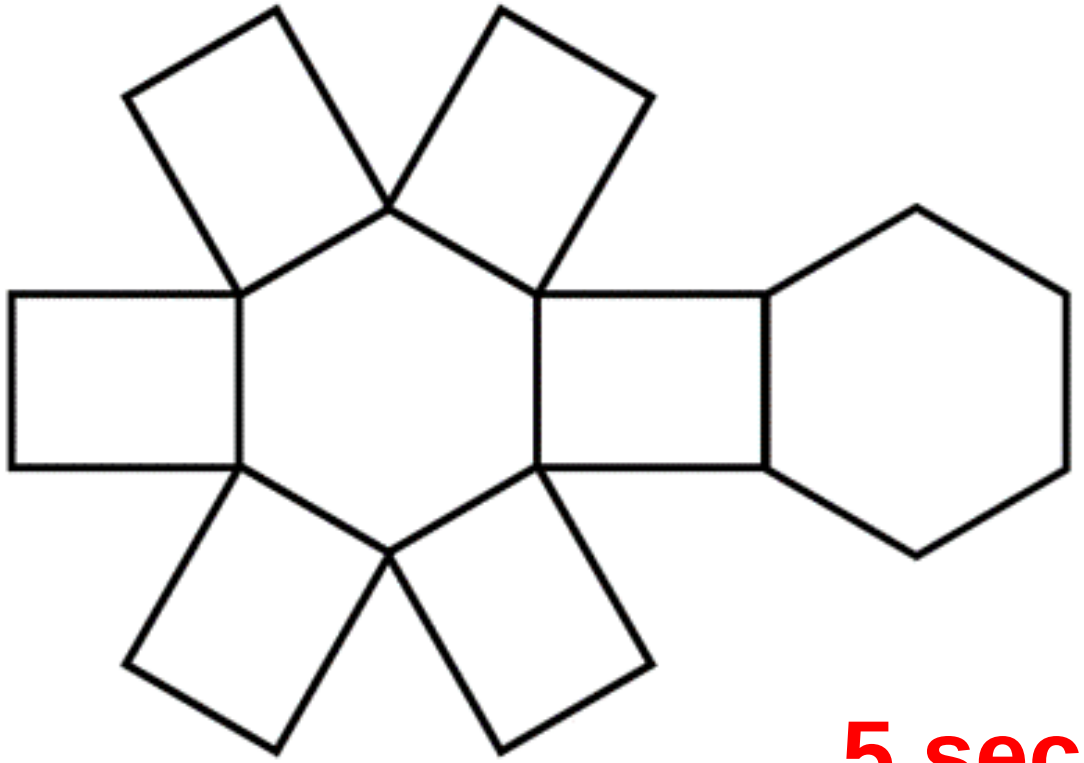


2022 M.A.T.H. Area
Round 2, Question 3

30 second timer has started

This net can be folded into a three dimensional geometric shape with 8 faces, 18 edges, and 12 vertices. Which is the best name for the folded shape?

A. Tetrahedron
B. Hexagonal prism
C. Triangular prism
D. Hexagon



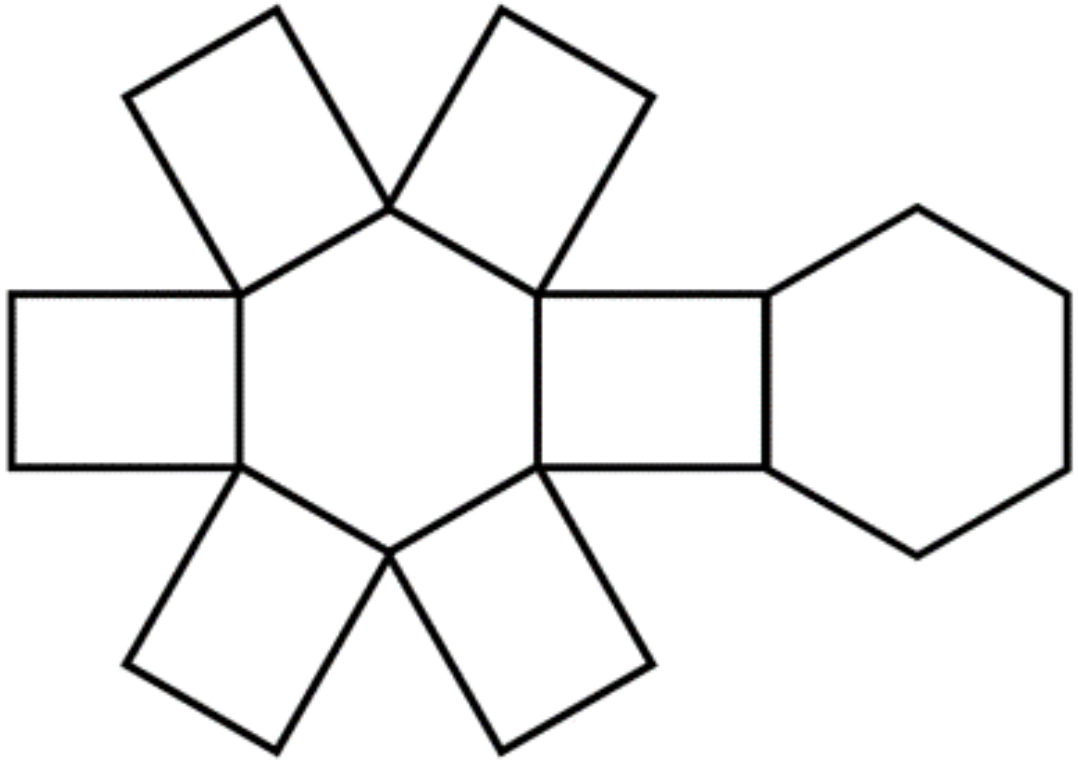
5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 3

This net can be folded into a three dimensional geometric shape with 8 faces, 18 edges, and 12 vertices. Which is the best name for the folded shape?

B. Hexagonal prism



30 seconds

Martha wants to frame a movie poster. The outer dimensions of the frame will be 24 inches wide and 36 inches long. How much framing does she need?

A. 6 ft²
B. 864 in²
C. 96 in
D. 120 in

2022 M.A.T.H. Area
Round 2, Question 4

30 second timer has started

Martha wants to frame a movie poster. The outer dimensions of the frame will be 24 inches wide and 36 inches long. How much framing does she need?

A. 6 ft^2
B. 864 in^2
C. 96 in
D. 120 in

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 4

Martha wants to frame a movie poster. The outer dimensions of the frame will be 24 inches wide and 36 inches long. How much framing does she need?

D. 120 in

P = 2l + 2w
P = 2(36) + 2(24)
P = 72 + 48
P = 120 inches

A substitution of one or two squad members may be made during this time period.

This is not a time out.
Coaches may not use this time for last minute coaching.

Captains must remain at the table.

60 seconds

Find the perimeter of a window that is in the shape of a semi-circle with a radius of 30 inches.

A. 94.2 in
B. 154.2 in
C. 47.1 in
D. 124.2 in

2022 M.A.T.H. Area
Round 2, Question 5

60 second timer has started

Find the perimeter of a window that is in the shape of a semi-circle with a radius of 30 inches.

A. 94.2 in
B. 154.2 in
C. 47.1 in
D. 124.2 in

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 5

Find the perimeter of a window that is in the shape of a semi-circle with a radius of 30 inches.

B. 154.2 in

The lower edge of the widow is the diameter of the circle, 60 inches.

Circumference of circle

$$C = \pi d$$
$$C = (3.14)(60)$$
$$C = 188.4$$

We need half of that or 94.2 inches.

Window perimeter is 60 + 94.2 = 154.2 inches

45 seconds

Mrs. Thomas will saw this 4 ft log into short pieces of equal length. Each individual piece will be 8 inches long. How many cuts will she make?

A. 6 cuts
B. 7 cuts
C. 5 cuts
D. 4 cuts

2022 M.A.T.H. Area
Round 2, Question 6

45 second timer has started

Mrs. Thomas will saw this 4 ft log into short pieces of equal length. Each individual piece will be 8 inches long. How many cuts will she make?

A. 6 cuts
B. 7 cuts
C. 5 cuts
D. 4 cuts

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 6

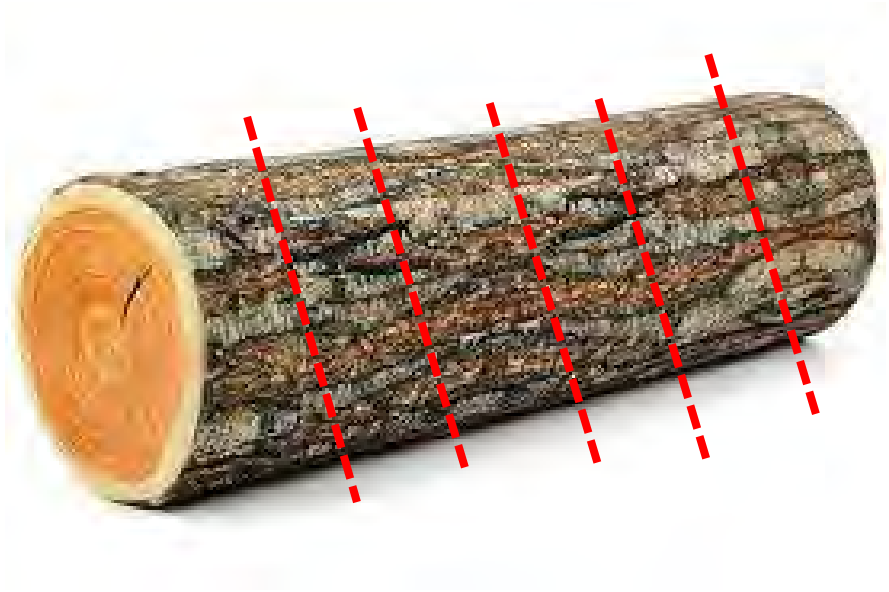
Mrs. Thomas will saw this 4 ft log into short pieces of equal length. Each individual piece will be 8 inches long. How many cuts will she make?

C. 5 cuts

4 ft = 4(12) or 48 inches total length

$48/8 = 6$ pieces each 8 inches long

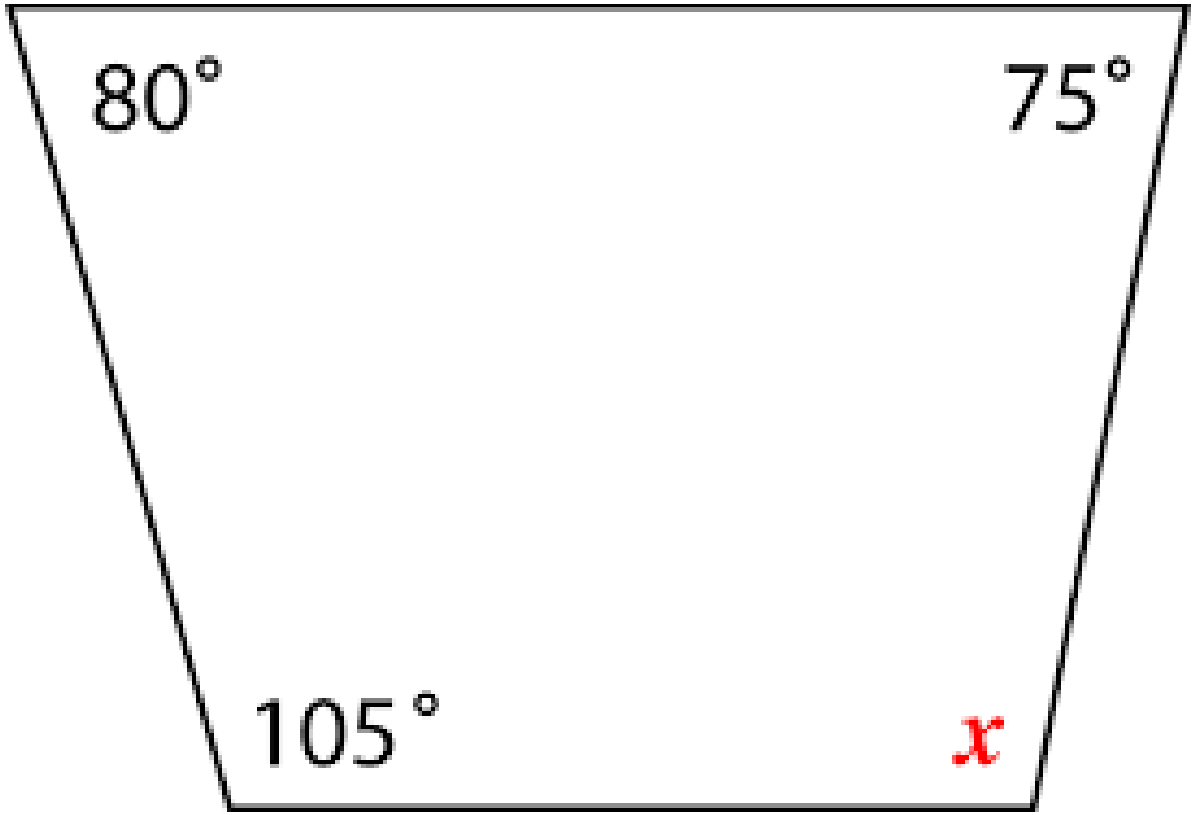
First cut creates two pieces.
Second cut creates third piece.
Third cut creates fourth piece.
Fourth cut creates fifth piece.
Fifth cut creates the final sixth piece.



45 seconds

Find the measure of the missing angle and identify the shape.

A. 110°, quadrilateral
B. 115°, parallelogram
C. 100°, quadrilateral
D. 120°, trapezoid

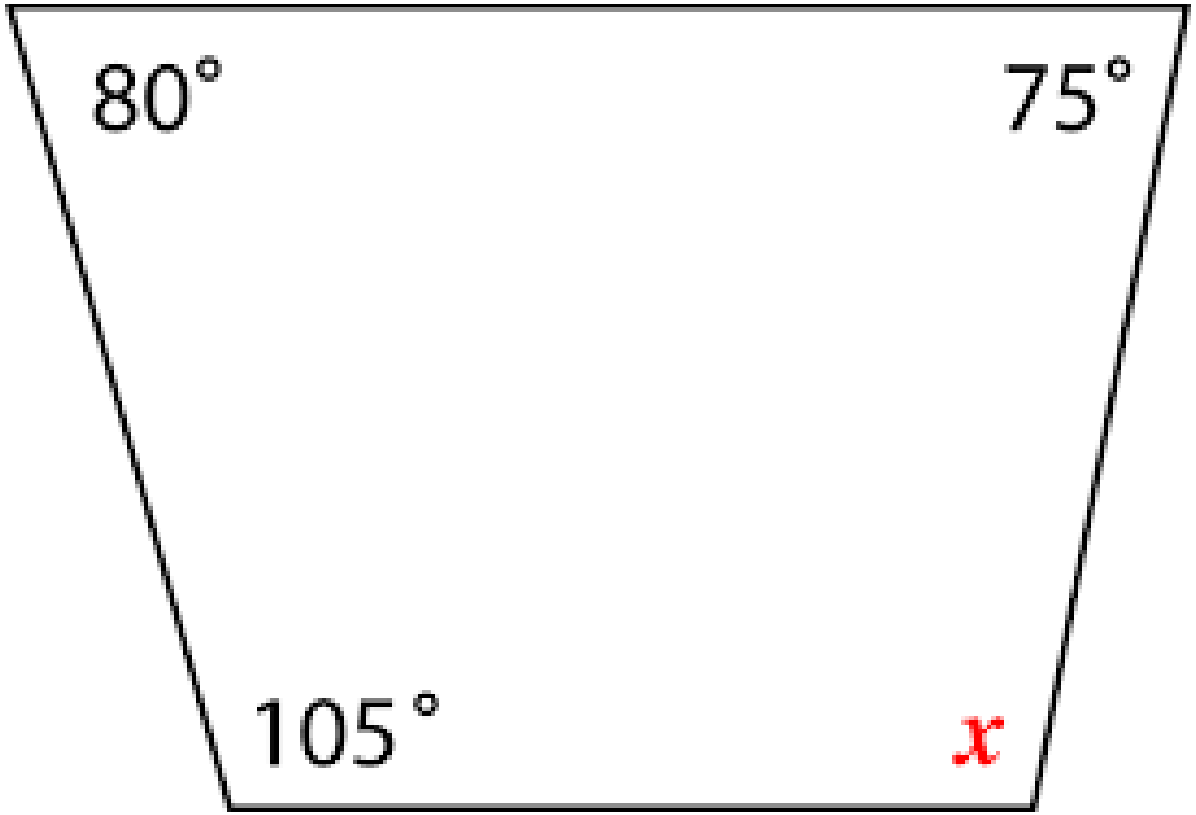


2022 M.A.T.H. Area
Round 2, Question 7

45 second timer has started

Find the measure of the missing angle and identify the shape.

A. 110°, quadrilateral
B. 115°, parallelogram
C. 100°, quadrilateral
D. 120°, trapezoid

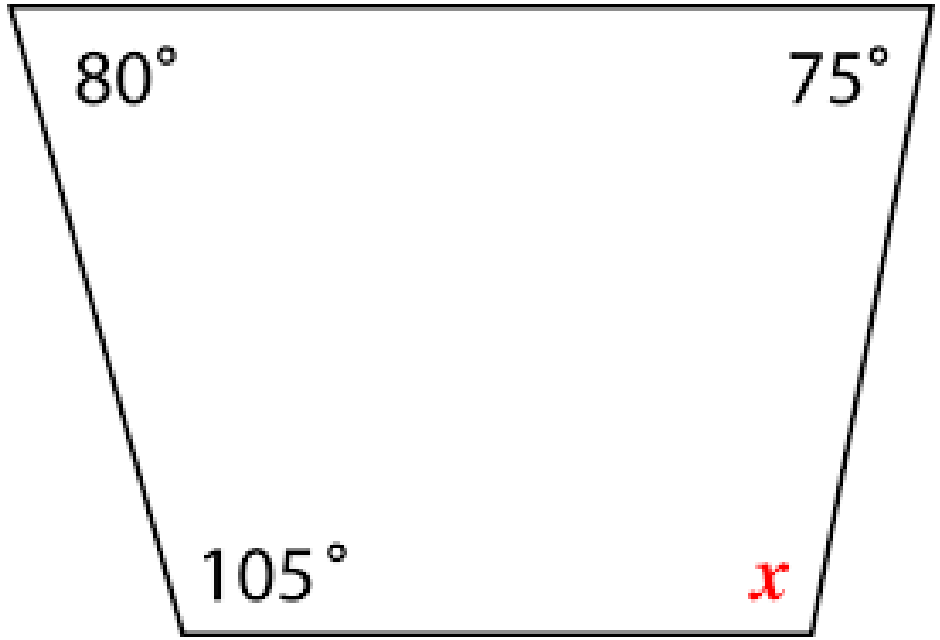


5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 7

Find the measure of the missing angle and identify the shape.



C. 100°, quadrilateral

Angles in 4-sided polygons add to 360 degrees.
80 + 75 + 105 = 260
360 – 260 = 100 degrees for angle marked *x*.

A. 110°, quadrilateral – it is a quadrilateral but the angle measure is wrong
B. 115°, parallelogram – sides are not parallel and angle measure is wrong
C. 100°, quadrilateral
D. 120°, trapezoid – it appears to be a trapezoid but angle measure is wrong

60 seconds

Which circular pizza with the same kind of crust and the given diameters gives the most pizza: an 18-inch pizza or two 12-inch pizzas? Why?

A. 2 12-inch pizzas; 24 is greater than 18.
B. 1 18-inch pizza; 81π is greater than $2(36)\ \pi$.
C. Two pizzas are better than one.
D. Neither. The amount of pizza will be the same.

2022 M.A.T.H. Area
Round 2, Question 8

60 second timer has started

Which circular pizza with the same kind of crust and the given diameters gives the most pizza: an 18-inch pizza or two 12-inch pizzas? Why?

A. 2 12-inch pizzas; 24 is greater than 18.
B. 1 18-inch pizza; 81π is greater than $2(36)\ \pi$.
C. Two pizzas are better than one.
D. Neither. The amount of pizza will be the same.

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 2, Question 8

Which circular pizza with the same kind of crust and the given diameters gives the most pizza: an 18-inch pizza or two 12-inch pizzas? Why?

B. 1 18-inch pizza; 81π is greater than 2(36) π.

If $d = 18$, then $r = 9$ and if $d = 12$, then $r = 6$.

Area of large pizza

$$A = \pi r^2$$
$$A = \pi(9)^2$$
$$A = 81\pi$$

Area of small pizza

$$A = \pi r^2$$
$$A = \pi(6)^2$$
$$A = 36\pi$$

Area of 2 small pizzas

$$A = 2(36)\pi \text{ or } 72\pi$$

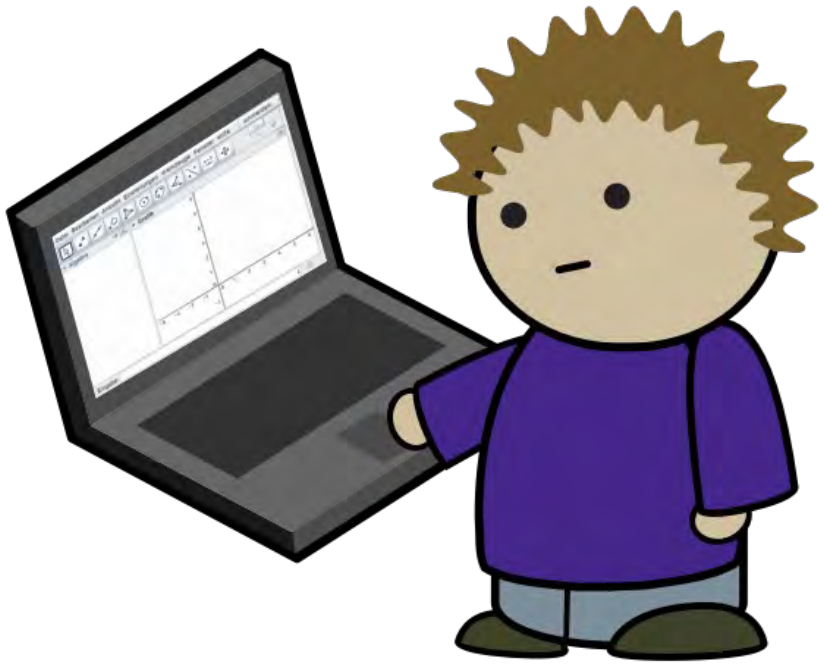
End
Round 2

Begin Round 3

30 seconds

What is $33\ {}^{1}/_{3}\%$ of 90?

A. 30
B. 31
C. 32
D. 33

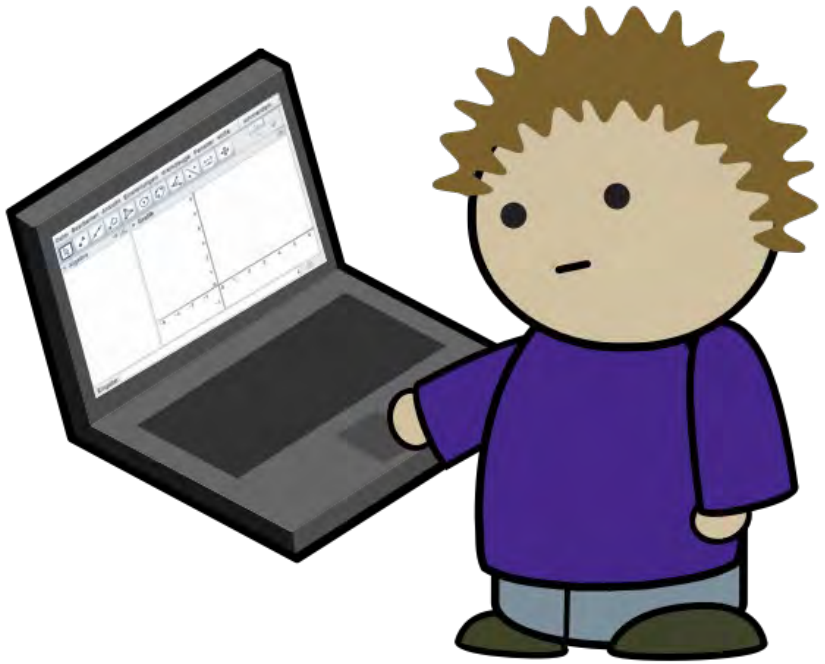


2022 M.A.T.H. Area
Round 3, Question 1

30 second timer has started

What is $33\ {}^{1}/_{3}\%$ of 90?

A. 30
B. 31
C. 32
D. 33



5 seconds

Time is up.

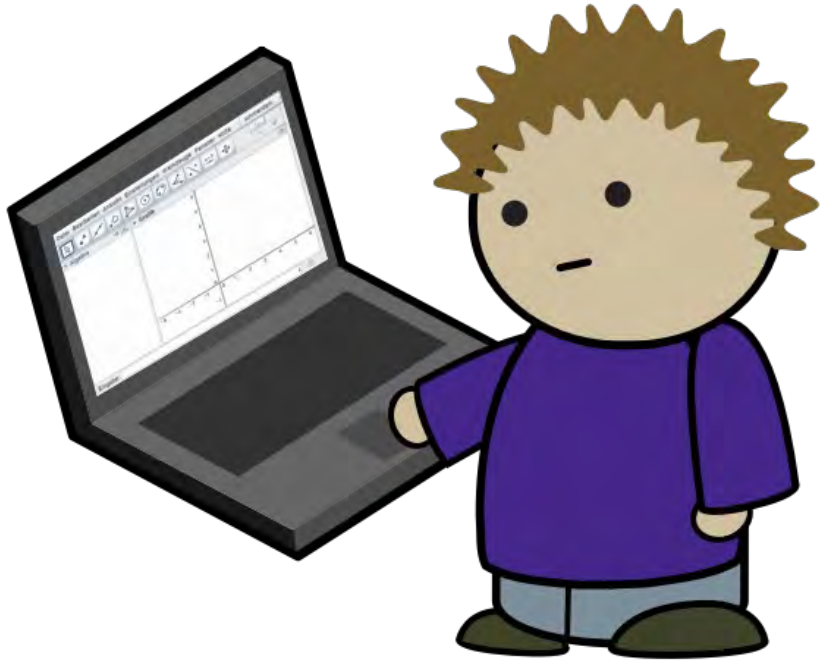
2022 M.A.T.H. Area
Round 3, Question 1

What is $33\ {}^{1}/_{3}\%$ of 90?

A. 30

$33\frac{1}{3}\ \%\ is\ the\ same\ as \frac{1}{3}$

One third of 90 is 30



30 seconds

What is the degree of rotational symmetry in this figure?

A. 72°
B. 180°
C. 45°
D. 90°

2022 M.A.T.H. Area
Round 3, Question 2

30 second timer has started

What is the degree of rotational symmetry in this figure?

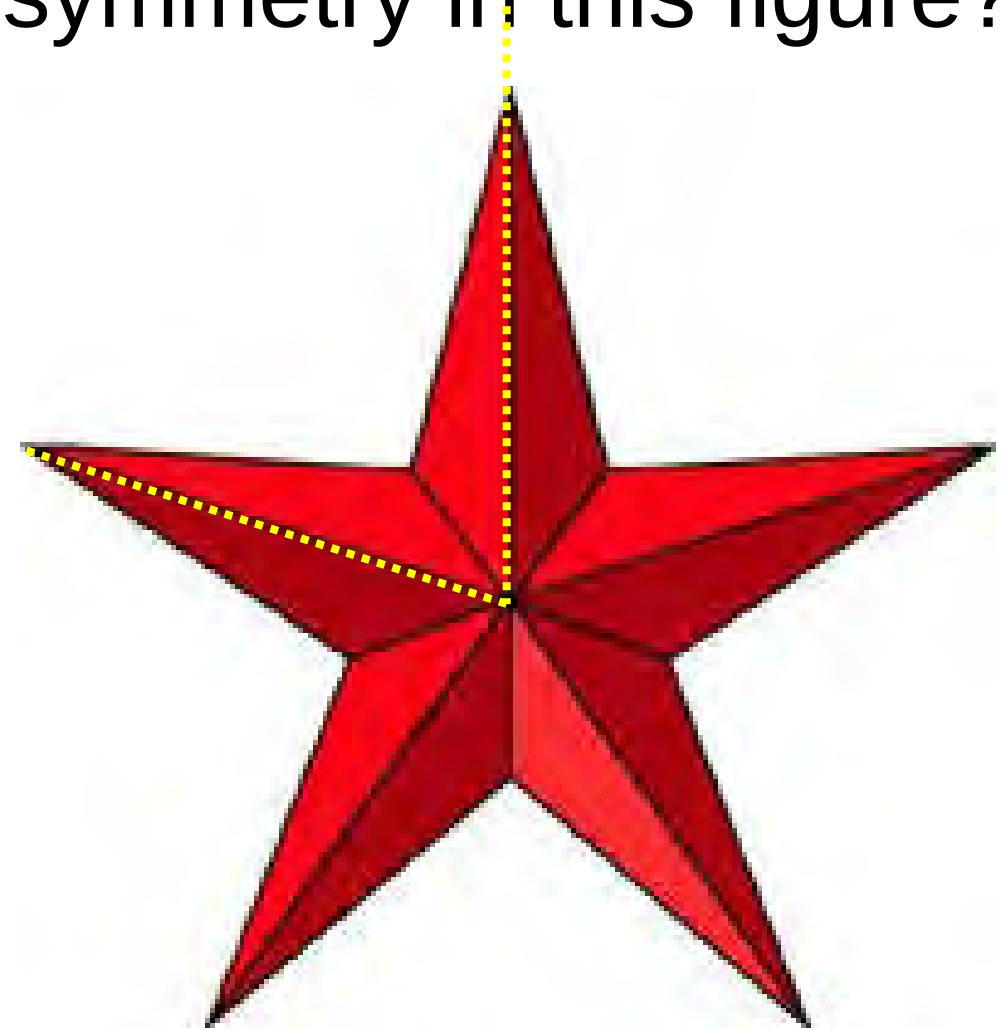
A. 72°
B. 180°
C. 45°
D. 90°

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 3, Question 2

What is the degree of rotational symmetry in this figure?



A. 72°

There are 360 degrees in a circle.

The star rotates about the center five times.

360 / 5 = 72 degrees

2022 M.A.T.H. Area
Round 3, Question 3

30 seconds

On the coldest night of the year, it was 8 degrees at dusk. By midnight, the temperature had dropped by 15 degrees. What was the temperature at midnight?

A. 8 degrees
B. 15 degrees
C. -8 degrees
D. -7 degrees

2022 M.A.T.H. Area
Round 3, Question 3

30 second timer has started

On the coldest night of the year, it was 8 degrees at dusk. By midnight, the temperature had dropped by 15 degrees. What was the temperature at midnight?

A. 8 degrees
B. 15 degrees
C. -8 degrees
D. -7 degrees

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 3, Question 3

On the coldest night of the year, it was 8 degrees at dusk. By midnight, the temperature had dropped by 15 degrees. What was the temperature at midnight?

D. -7 degrees

From 8 degrees, a drop of 8 gets us to zero.

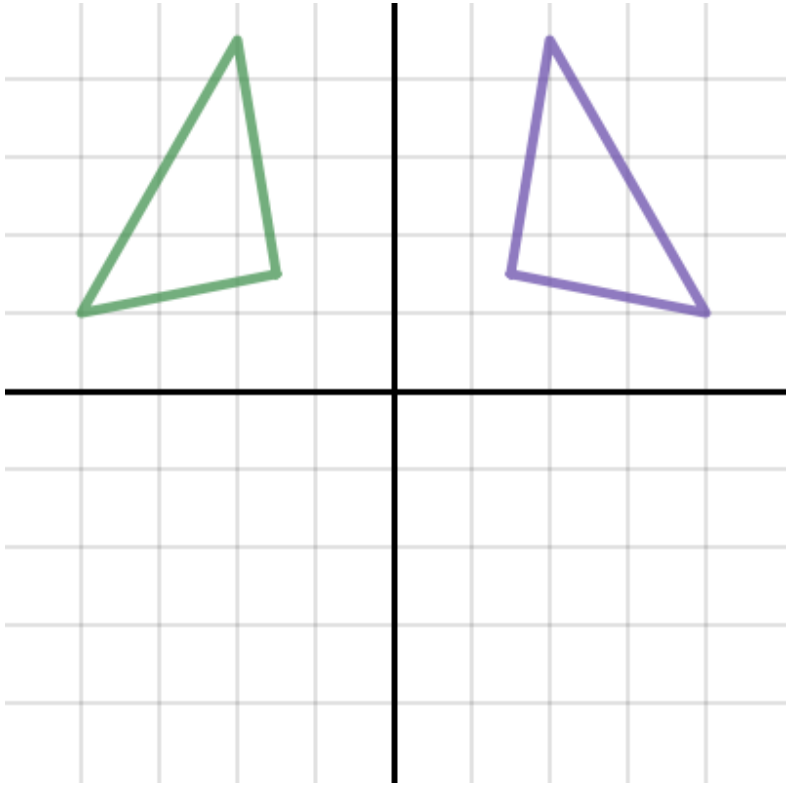
There is still 7 more degrees to drop so the temperature is now 7 degrees below zero or negative seven.

8 - 15
8 + (-15)
-7

30 seconds

Identify the type of transformation shown if the shape on the left is the original and the shape on the right is the transformation.

A. Translation
B. Rotation
C. Reflection
D. Dilation

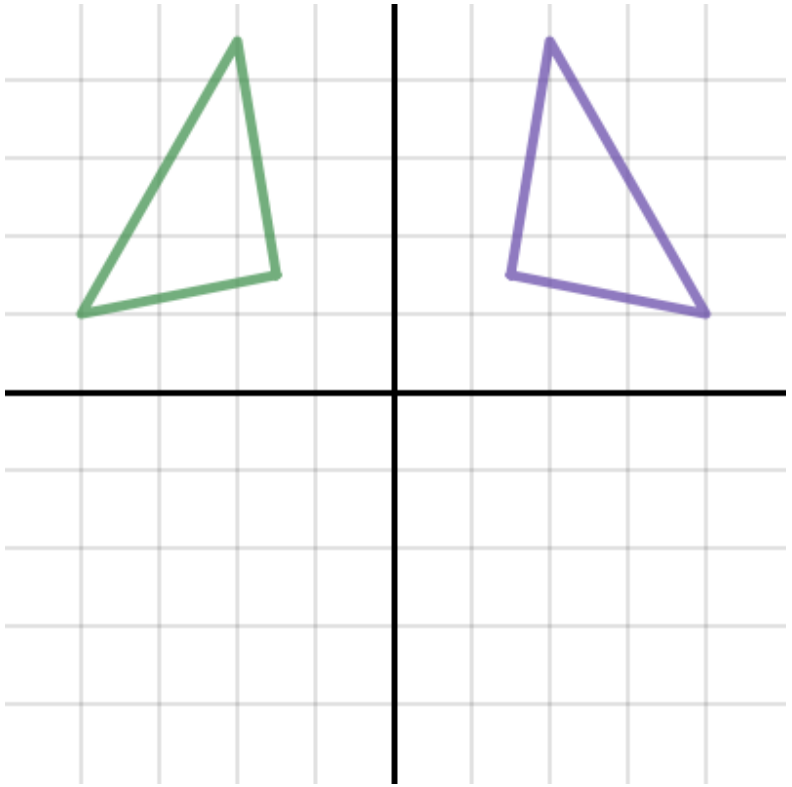


2022 M.A.T.H. Area
Round 3, Question 4

30 second timer has started

Identify the type of transformation shown if the shape on the left is the original and the shape on the right is the transformation.

A. Translation
B. Rotation
C. Reflection
D. Dilation

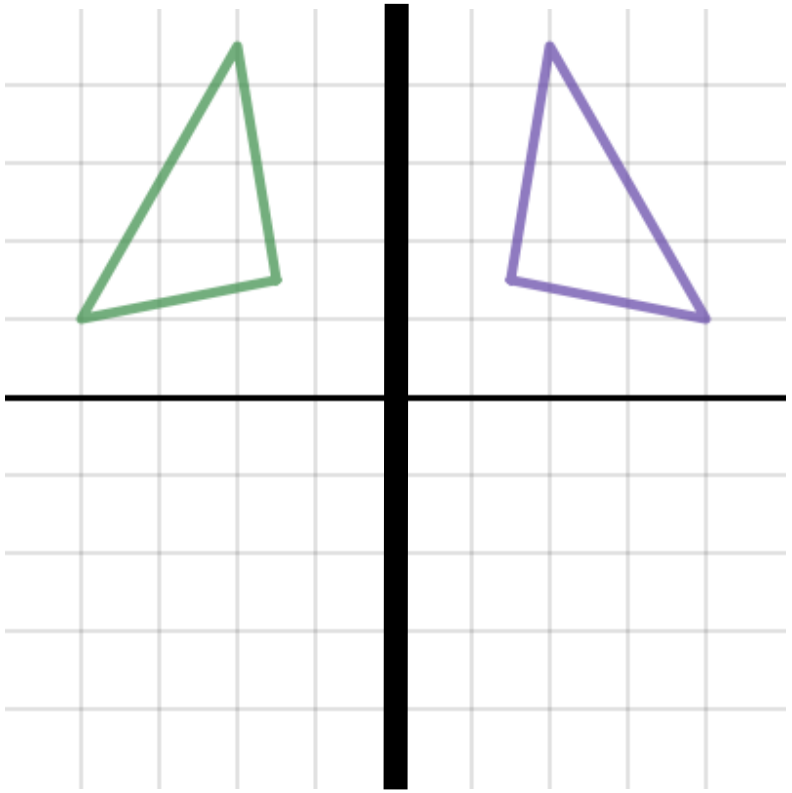


5 seconds

Time is up.

2022 M.A.T.H. Area
Round 3, Question 4

Identify the type of transformation shown if the shape on the left is the original and the shape on the right is the transformation.



C. Reflection

The heavy dark line or y-axis is acting like a mirror.

A substitution of one or two squad members may be made during this time period.

This is not a time out.
Coaches may not use this time for last minute coaching.

Captains must remain at the table.

If the area of a square is 36 square inches, what is its perimeter?

A. 6 in
B. 12 in
C. 18 in
D. 24 in

2022 M.A.T.H. Area
Round 3, Question 5

45 second timer has started

If the area of a square is 36 square inches, what is its perimeter?

A. 6 in
B. 12 in
C. 18 in
D. 24 in

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 3, Question 5

If the area of a square is 36 square inches, what is its perimeter?

D. 24 in

$A = s^2$
A = 36 so one side is 6 inches.
P = 4s so 4(6) = 24

30 seconds

The face-off circle on a hockey rink has a radius of 15 ft. What is the area? Use 3.14 for π.

A. 94.2 ft^2
B. 706.5 ft^2
C. 607.5 ft^2
D. 188.4 ft^2

2022 M.A.T.H. Area
Round 3, Question 6

30 second timer has started

The face-off circle on a hockey rink has a radius of 15 ft. What is the area? Use 3.14 for π.

A. 94.2 ft^2
B. 706.5 ft^2
C. 607.5 ft^2
D. 188.4 ft^2

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 3, Question 6

The face-off circle on a hockey rink has a radius of 15 ft. What is the area? Use 3.14 for π.

B. 706.5 ft^2

$$A = \pi r^2$$
$$A = 3.14(15)2$$
$$A = 3.14(225)$$
$$A = 706.5$$

60 seconds

Camden bought 5 fishing lures, one each at $9.92, $7.93, $4.95, $6.95, and $8.62. The lures are all subject to a 7% sales tax. How much change should he receive if he gives the clerk $50?

A. $8.94
B. $9.00
C. $11.63
D. $11.64

2022 M.A.T.H. Area
Round 3, Question 7

60 second timer has started

Camden bought 5 fishing lures, one each at $9.92, $7.93, $4.95, $6.95, and $8.62. The lures are all subject to a 7% sales tax. How much change should he receive if he gives the clerk $50?

A. $8.94
B. $9.00
C. $11.63
D. $11.64

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 3, Question 7

Camden bought 5 fishing lures, one each at $9.92, $7.93, $4.95, $6.95, and $8.62. The lures are all subject to a 7% sales tax. How much change should he receive if he gives the clerk $50?

A. $8.94

$9.92
7.93
4.95
6.95
<u>+ 8.62</u>
$38.37 subtotal

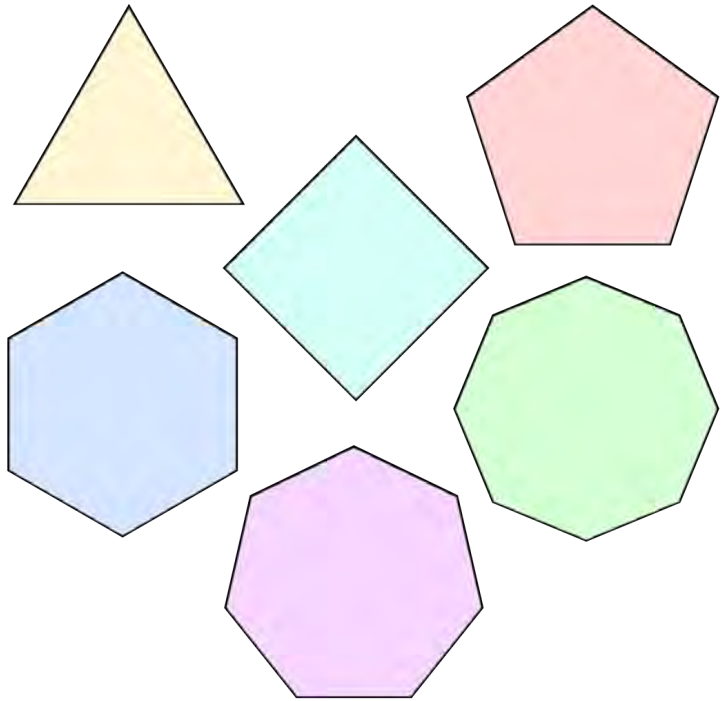
7% of $38.37 = $2.69 tax

$38.40 + $2.69 = $41.04 total with tax

$50.00 - $41.06 = $8.94

In a regular triangle, each interior angle measures 60°. In a regular quadrilateral, each interior angle measures 90°. What is the measure of each interior angle in a regular nonagon with nine sides?

A. 120°
B. 45°
C. 140°
D. 150°

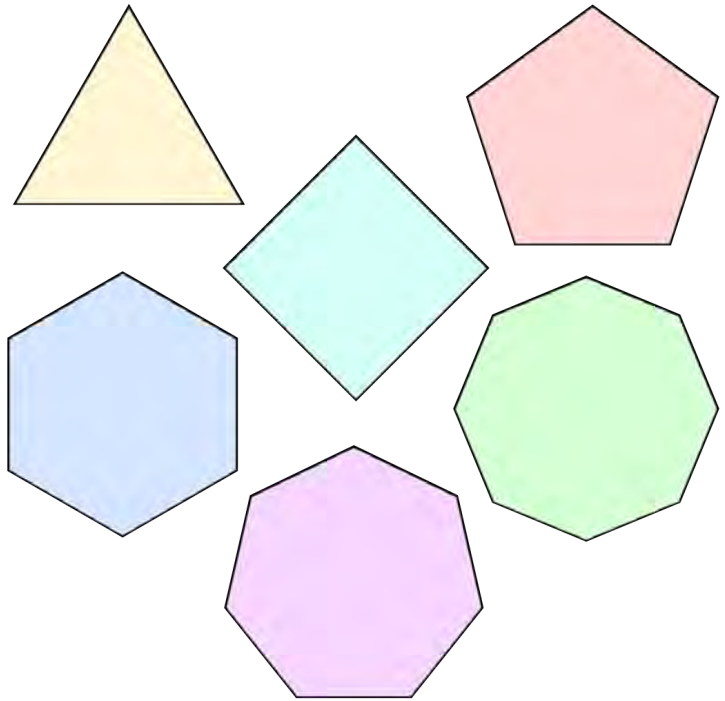


2022 M.A.T.H. Area
Round 3, Question 8

60 second timer has started

In a regular triangle, each interior angle measures 60°. In a regular quadrilateral, each interior angle measures 90°. What is the measure of each interior angle in a regular nonagon with nine sides?

A. 120°
B. 45°
C. 140°
D. 150°



5 seconds

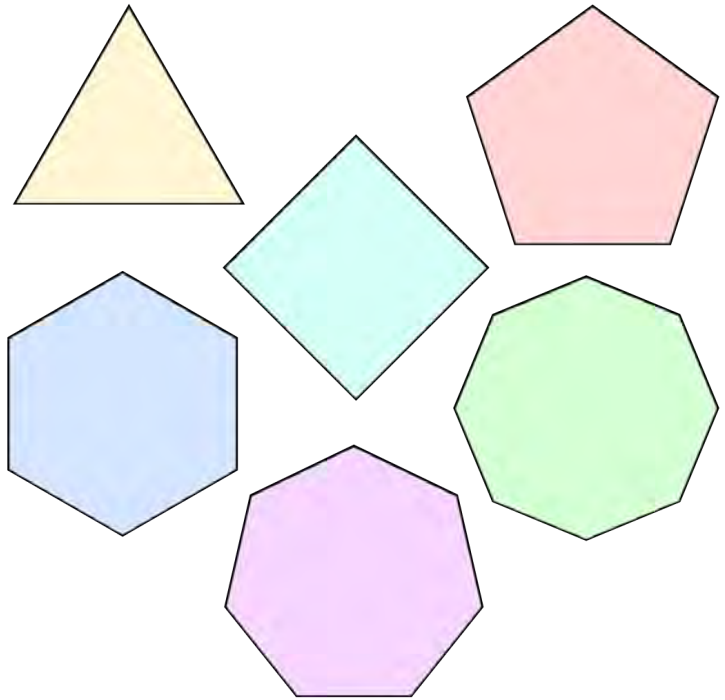
Time is up.

2022 M.A.T.H. Area
Round 3, Question 8

In a regular triangle, each interior angle measures 60°. In a regular quadrilateral, each interior angle measures 90°. What is the measure of each interior angle in a regular nonagon with nine sides?

C. 140°

sides	Sum of angles	One angle
3	180	180 ÷ 3 = 60
4	2(180) = 360	360 ÷ 4 = 90
5	3(180) = 540	540 ÷ 5 = 108
6	4(180) = 720	720 ÷ 6 = 120
7	5(180) = 900	900 ÷ 7 = 128.6
8	6(180) = 1080	1080 ÷ 8 = 135
9	7(180) = 1260	1260 ÷ 9 = 140



End
Round 3

Begin Round 4

30 seconds

Simplify:

$$(2 \times 1/100) + (3 \times 1/1000) + (7 \times 1/10{,}000)$$

A. 0.0237
B. 237
C. 2.370
D. 23.70

2022 M.A.T.H. Area
Round 4, Question 1

30 second timer has started

Simplify:

$$(2 \times 1/100) + (3 \times 1/1000) + (7 \times 1/10{,}000)$$

A. 0.0237
B. 237
C. 2.370
D. 23.70

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 1

Simplify:

$$(2 \times 1/100) + (3 \times 1/1000) + (7 \times 1/10{,}000)$$

A. 0.0237

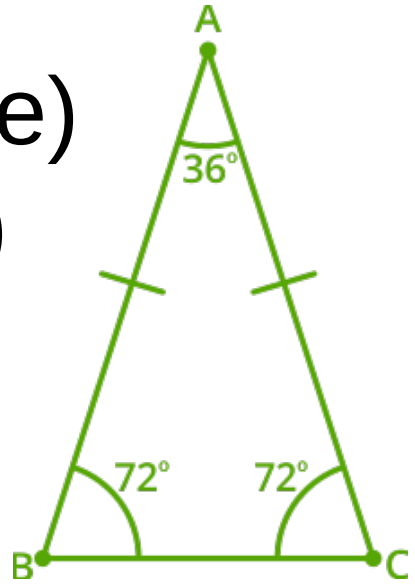
Change fractions to decimals to ”see” place value

(2 x 0.01) + (3 x 0.001) + (7 x 0.0001)

This number is read two hundred thirty seven ten-thousandths.

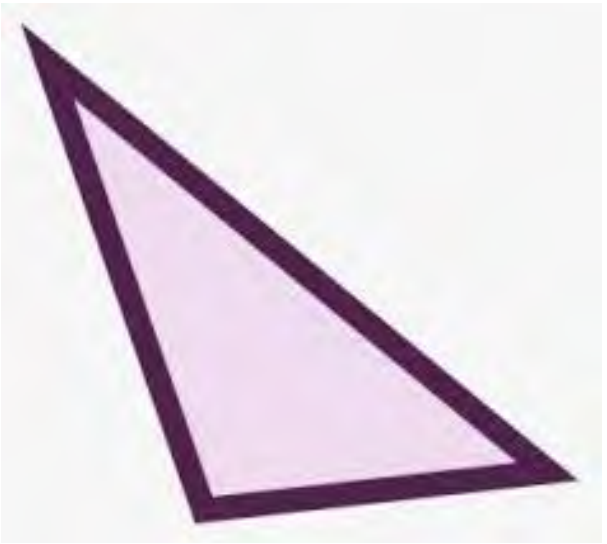
Which triangle can we be sure is isosceles?

A. Not enough information given
B. #1 (on left)
C. #2 (in middle)
D. #3 (on right)



1

2



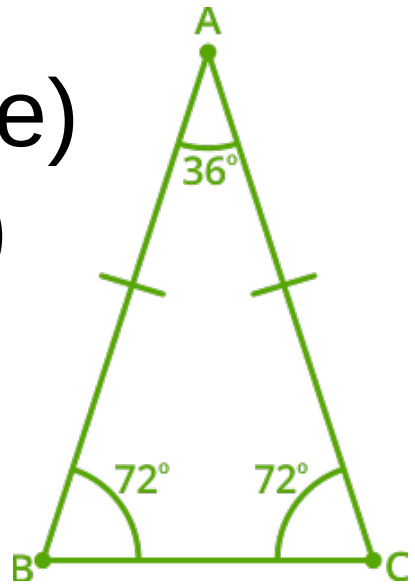
3

2022 M.A.T.H. Area
Round 4, Question 2

30 second timer has started

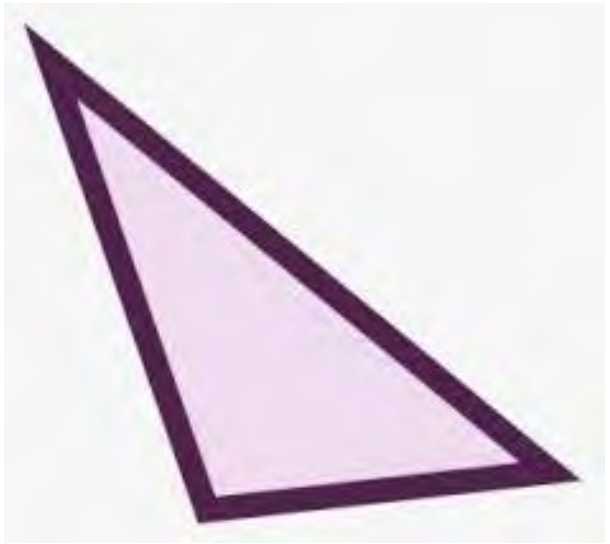
Which triangle can we be sure is isosceles?

A. Not enough information given
B. #1 (on left)
C. #2 (in middle)
D. #3 (on right)



1

2



3

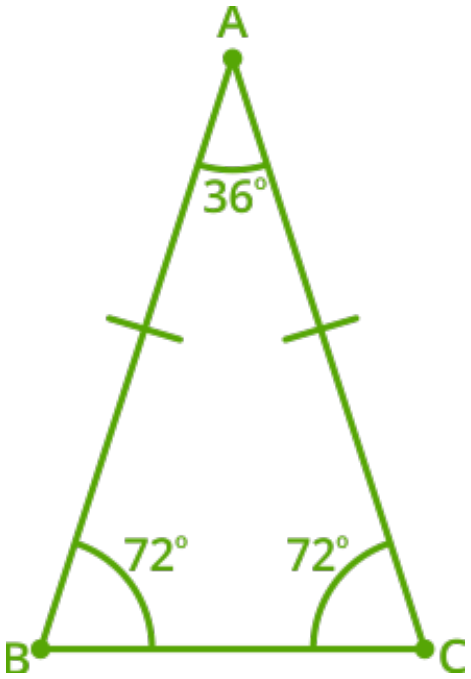
5 seconds

Time is up.

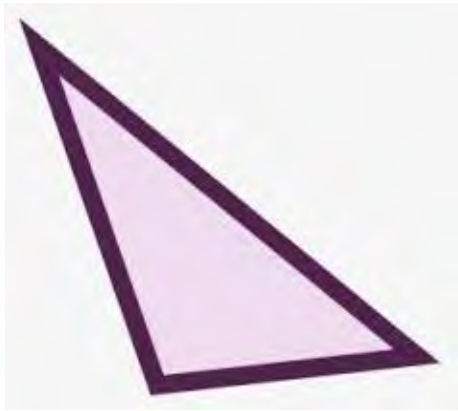
2022 M.A.T.H. Area
Round 4, Question 2

Which triangle can we be sure is isosceles?

B. #1 (on left)



Only the first one is marked with enough information to be sure it has 2 sides of the same measure. The red MAY be a right isosceles but it is not marked.



45 seconds

Brad worked for Mr. Schuster for 4 hours and 15 minutes on Monday, 2 hours and 20 minutes on Tuesday, 1 hour and 45 minutes on Wednesday, and 3 hours and 19 minutes on Thursday. What is the total amount of time he worked?

A. 11 hours, 39 min
B. 11 hours, 49 min
C. 10 hours, 29 min
D. 11 hours, 13 min

2022 M.A.T.H. Area
Round 4, Question 3

45 second timer has started

Brad worked for Mr. Schuster for 4 hours and 15 minutes on Monday, 2 hours and 20 minutes on Tuesday, 1 hour and 45 minutes on Wednesday, and 3 hours and 19 minutes on Thursday. What is the total amount of time he worked?

A. 11 hours, 39 min
B. 11 hours, 49 min
C. 10 hours, 29 min
D. 11 hours, 13 min

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 3

Brad worked for Mr. Schuster for 4 hours and 15 minutes on Monday, 2 hours and 20 minutes on Tuesday, 1 hour and 45 minutes on Wednesday, and 3 hours and 19 minutes on Thursday. What is the total amount of time he worked?

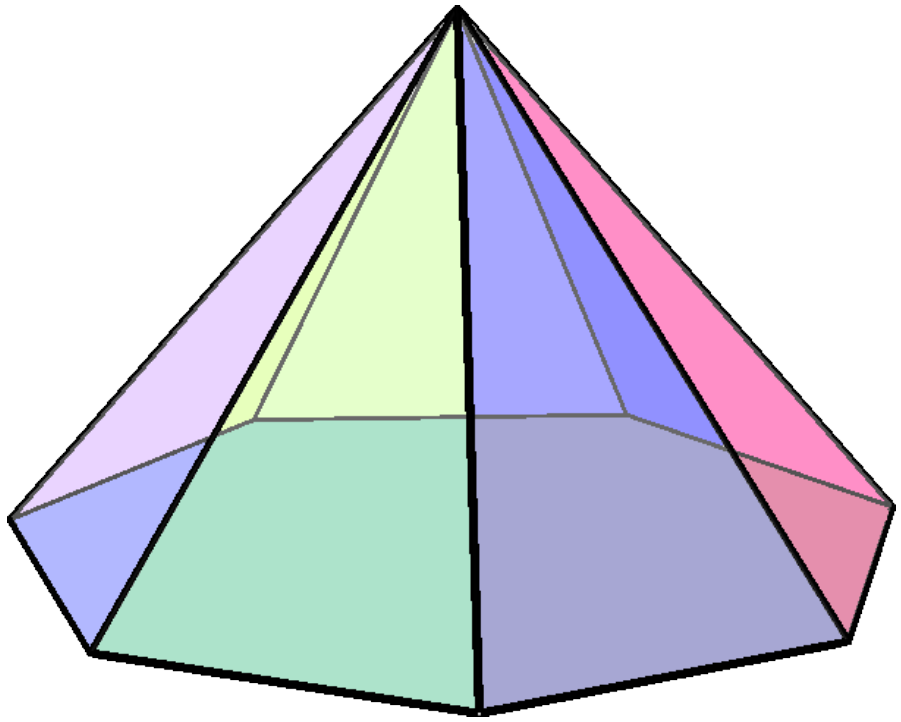
A. 11 hours, 39 min

4:15
2:20
1:45
+ 3:19
10:99

1 hour = 60 minutes
99 minutes = 1 hour 39 minutes

45 seconds

How many faces, edges, and vertices are found on a heptagonal pyramid like the one shown here?

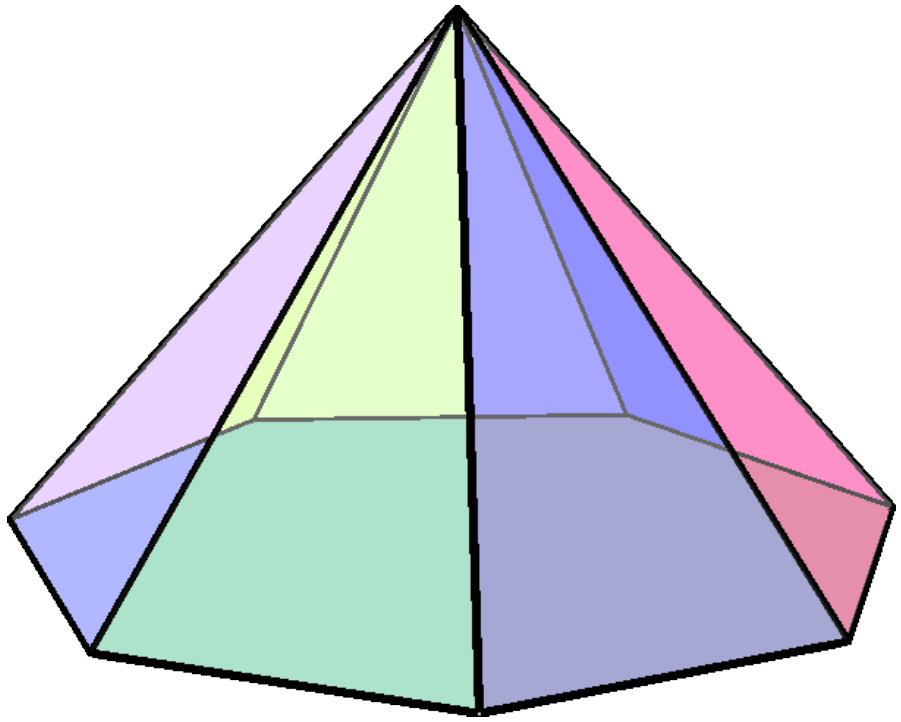


A. 7 faces, 18 edges, 8 vertices
B. 8 faces, 14 edges, 7 vertices
C. 9 faces, 18 edges, 8 vertices
D. 8 faces, 14 edges, 8 vertices

2022 M.A.T.H. Area
Round 4, Question 4

45 second timer has started

How many faces, edges, and vertices are found on a heptagonal pyramid like the one shown here?



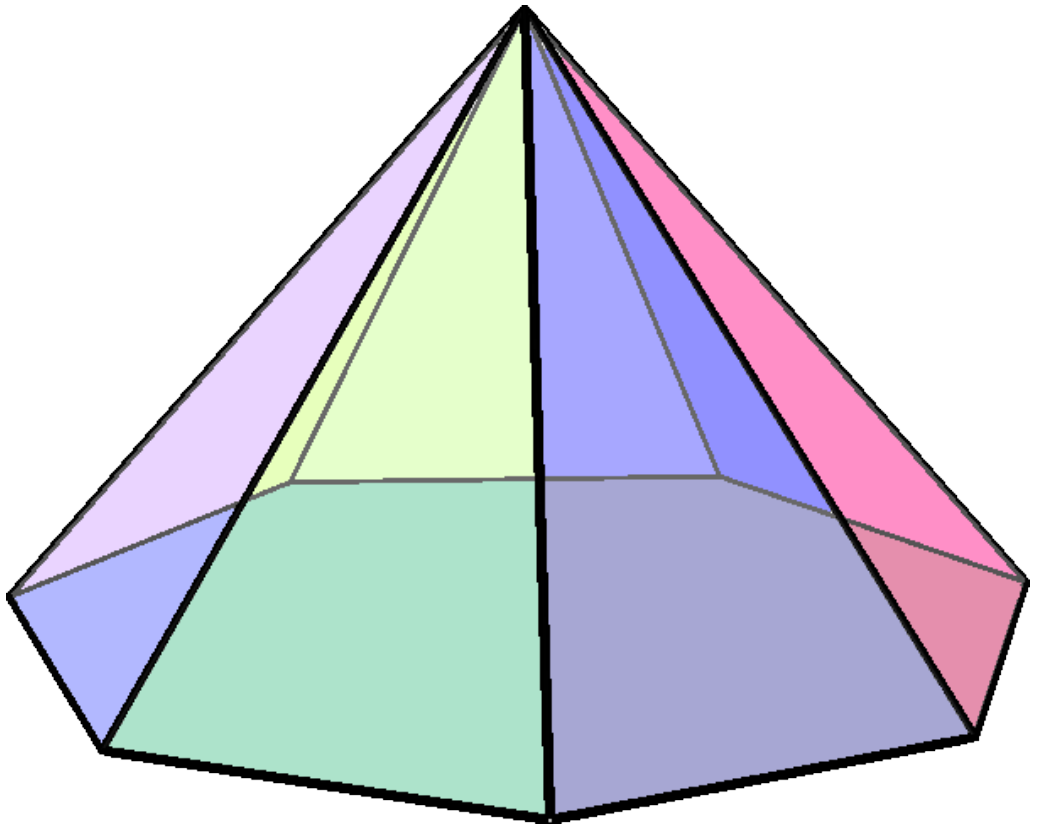
A. 7 faces, 18 edges, 8 vertices
B. 8 faces, 14 edges, 7 vertices
C. 9 faces, 18 edges, 8 vertices
D. 8 faces, 14 edges, 8 vertices

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 4

How many faces, edges, and vertices are found on a heptagonal pyramid like the one shown here?



D. 8 faces, 14 edges, 8 vertices

Heptagon base and 7 triangle sides = 8 faces
Heptagon has 7 edges, 7 edges from base to top vertex = 14 edges
Heptagon has 7 corners or vertices and one more at the top = 8 vertices

Plus Euler's Formula F + V = E + 2 can be used to check each answer:
8 + 8 = 14 + 2

A substitution of one or two squad members may be made during this time period.

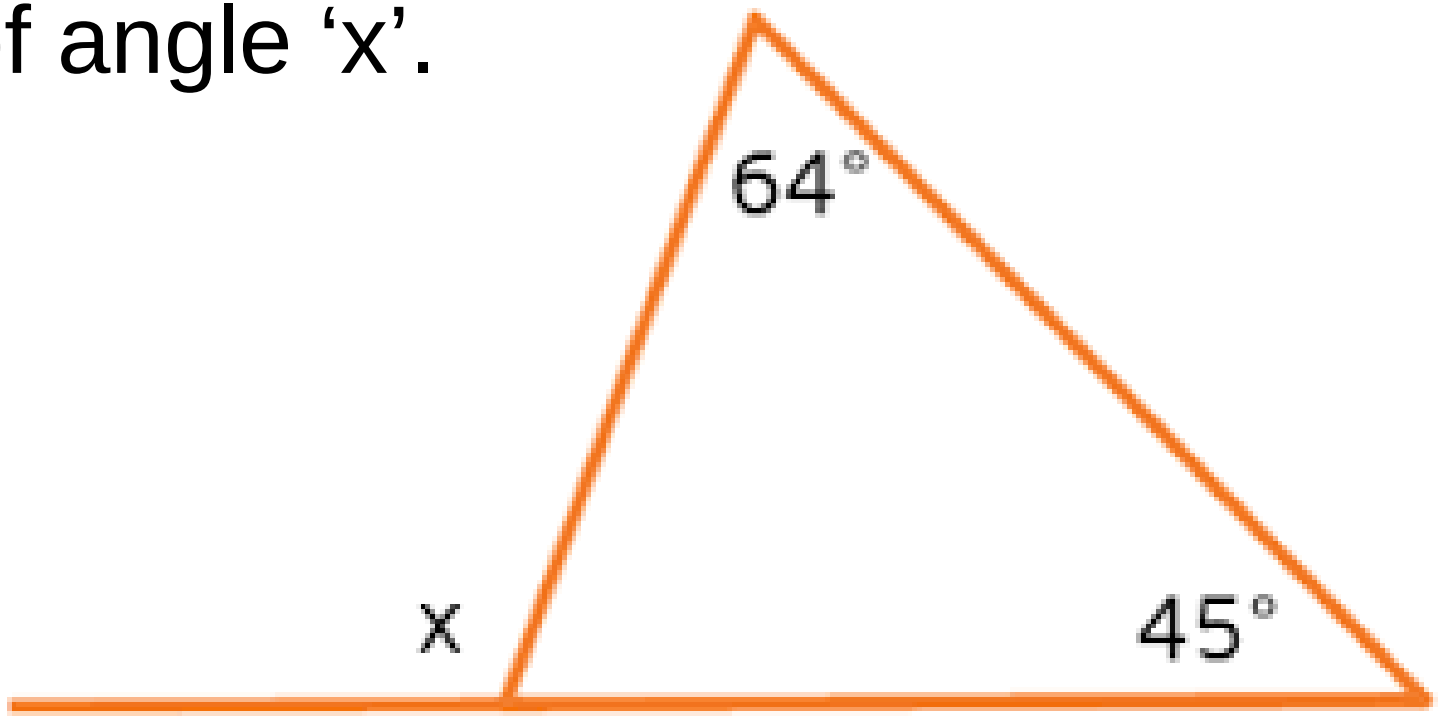
This is not a time out.
Coaches may not use this time for last minute coaching.

Captains must remain at the table.

45 seconds

Find the measure of angle ‘x’.

A. 71°
B. 81°
C. 99°
D. 109°

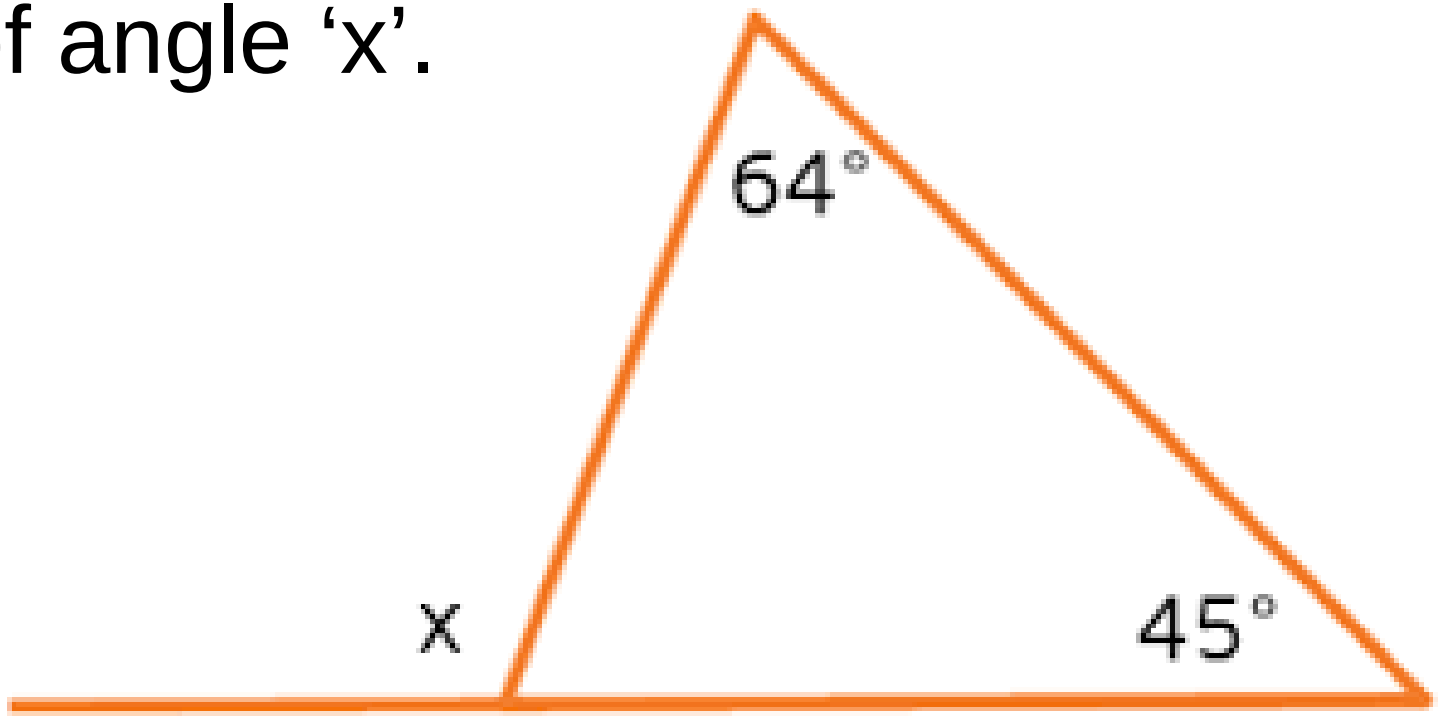


2022 M.A.T.H. Area
Round 4, Question 5

45 second timer has started

Find the measure of angle ‘x’.

A. 71°
B. 81°
C. 99°
D. 109°

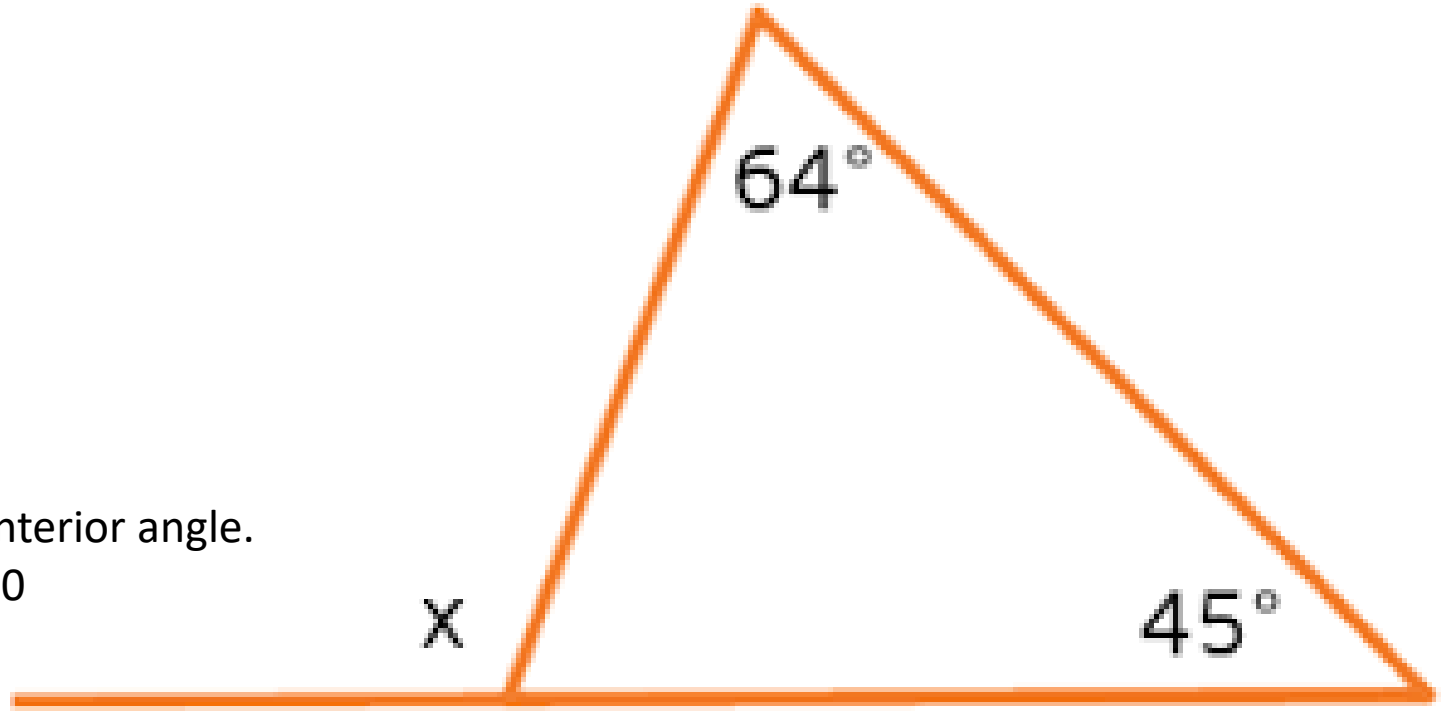


5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 5

Find the measure of angle ‘x’.



D. 109°

Sum of angles in any triangle is 180.
180 – 64 – 45 = 71 imeasure of the missing interior angle.
X plus missing angle in the triangle is also 180
because they are supplementary angles.
X = 180 – 71
X = 109

The Drum Major is located at (3, 4) on a coordinate plane. If he marches 6 spaces down and 2 spaces to the right, where will he be?

A. (-3, 6)
B. (-6, 2)
C. (-2, 5)
D. (5, -2)

2022 M.A.T.H. Area
Round 4, Question 6

60 second timer has started

The Drum Major is located at (3, 4) on a coordinate plane. If he marches 6 spaces down and 2 spaces to the right, where will he be?

A. (-3, 6)
B. (-6, 2)
C. (-2, 5)
D. (5, -2)

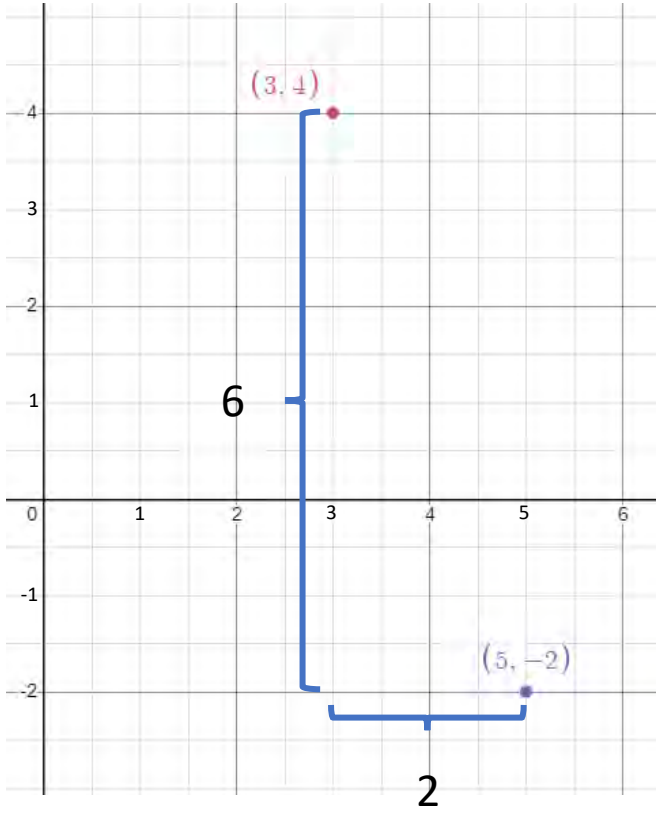
5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 6

The Drum Major is located at (3, 4) on a coordinate plane. If he marches 6 spaces down and 2 spaces to the right, where will he be?

D. (5, -2)



60 seconds

A public library has a large aquarium in the shape of a rectangular prism. The base is 6 ft by 2.5 ft. The height is 4 ft. How many square feet of glass were used to build the aquarium if the top of the aquarium is open?

A. 76 ft^2
B. 60 ft^2
C. 83 ft^2
D. 98 ft^2

2022 M.A.T.H. Area
Round 4, Question 7

60 second timer has started

A public library has a large aquarium in the shape of a rectangular prism. The base is 6 ft by 2.5 ft. The height is 4 ft. How many square feet of glass were used to build the aquarium if the top of the aquarium is open?

A. 76 ft^2
B. 60 ft^2
C. 83 ft^2
D. 98 ft^2

5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 7

A public library has a large aquarium in the shape of a rectangular prism. The base is 6 ft by 2.5 ft. The height is 4 ft. How many square feet of glass were used to build the aquarium if the top of the aquarium is open?

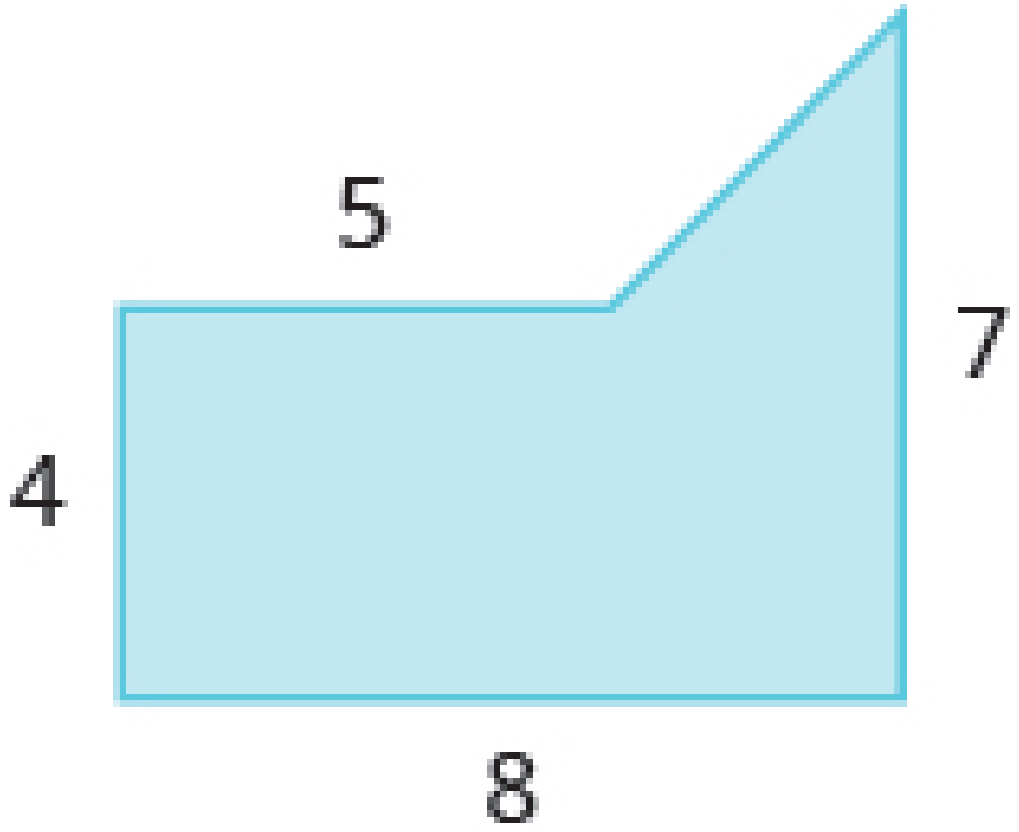
Each face is a rectangle with A = lw

Base 6 x 2.5 = 15
Front 6 x 4 = 24
Back 6 x 4 = 24
Left 2.5 x 4 = 10
Right 2.5 x 4 = 10
Total 83 sq ft

C. 83 ft^2

What is the area of this irregular polygon with three right angles?

A. 41 square units
B. 32.5 square units
C. 36.5 square units
D. 40 square units

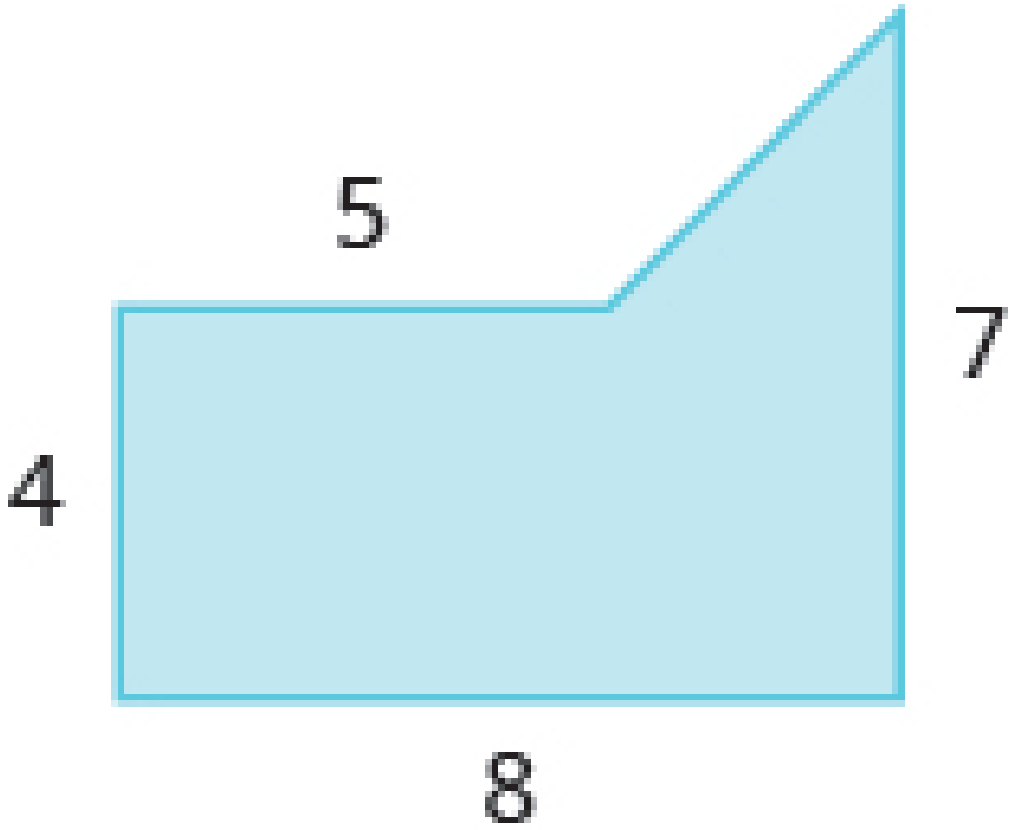


2022 M.A.T.H. Area
Round 4, Question 8

60 second timer has started

What is the area of this irregular polygon with three right angles?

A. 41 square units
B. 32.5 square units
C. 36.5 square units
D. 40 square units



5 seconds

Time is up.

2022 M.A.T.H. Area
Round 4, Question 8

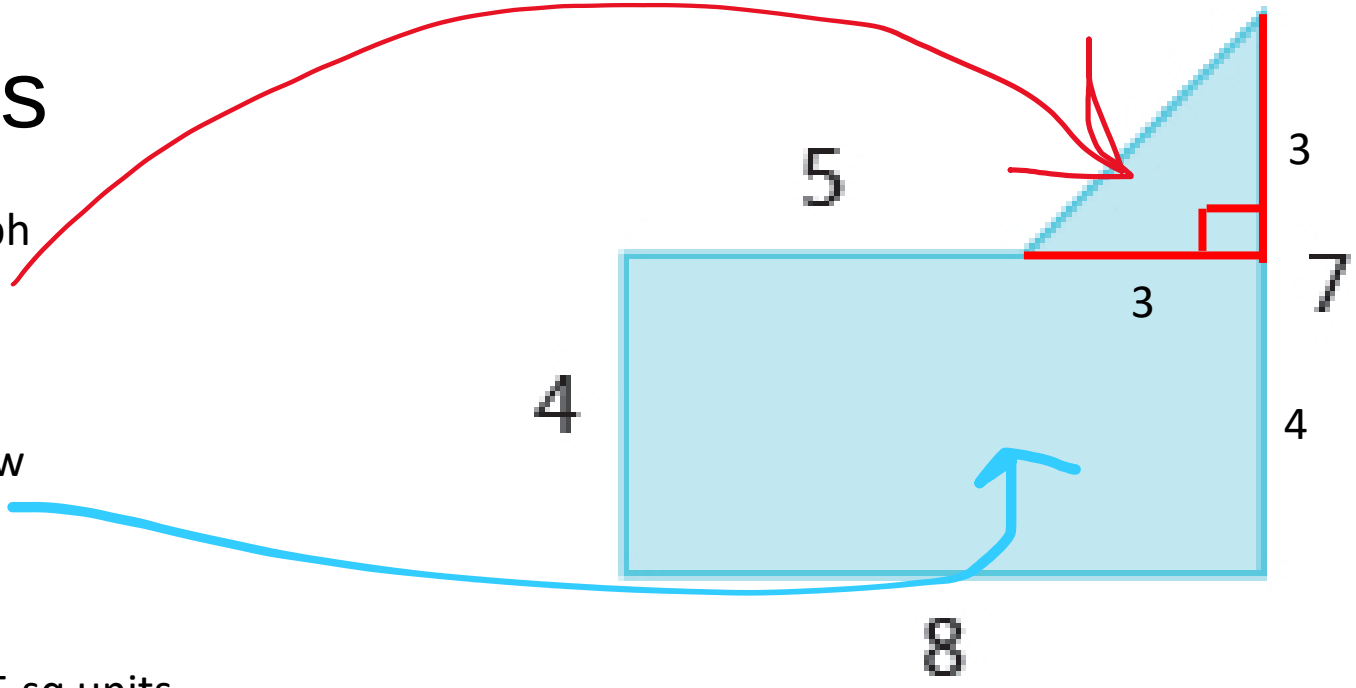
What is the area of this irregular polygon with three right angles?

C. 36.5 square units

Triangle area is A = ½ bh
A = ½(3)(3)
A = 4.5 sq units

Area of rectangle A = lw
A = 4 x 8 or 32 sq units

Total is 32 + 4.5 or 36.5 sq units



End
Round 4

PURDUE UNIVERSITY®

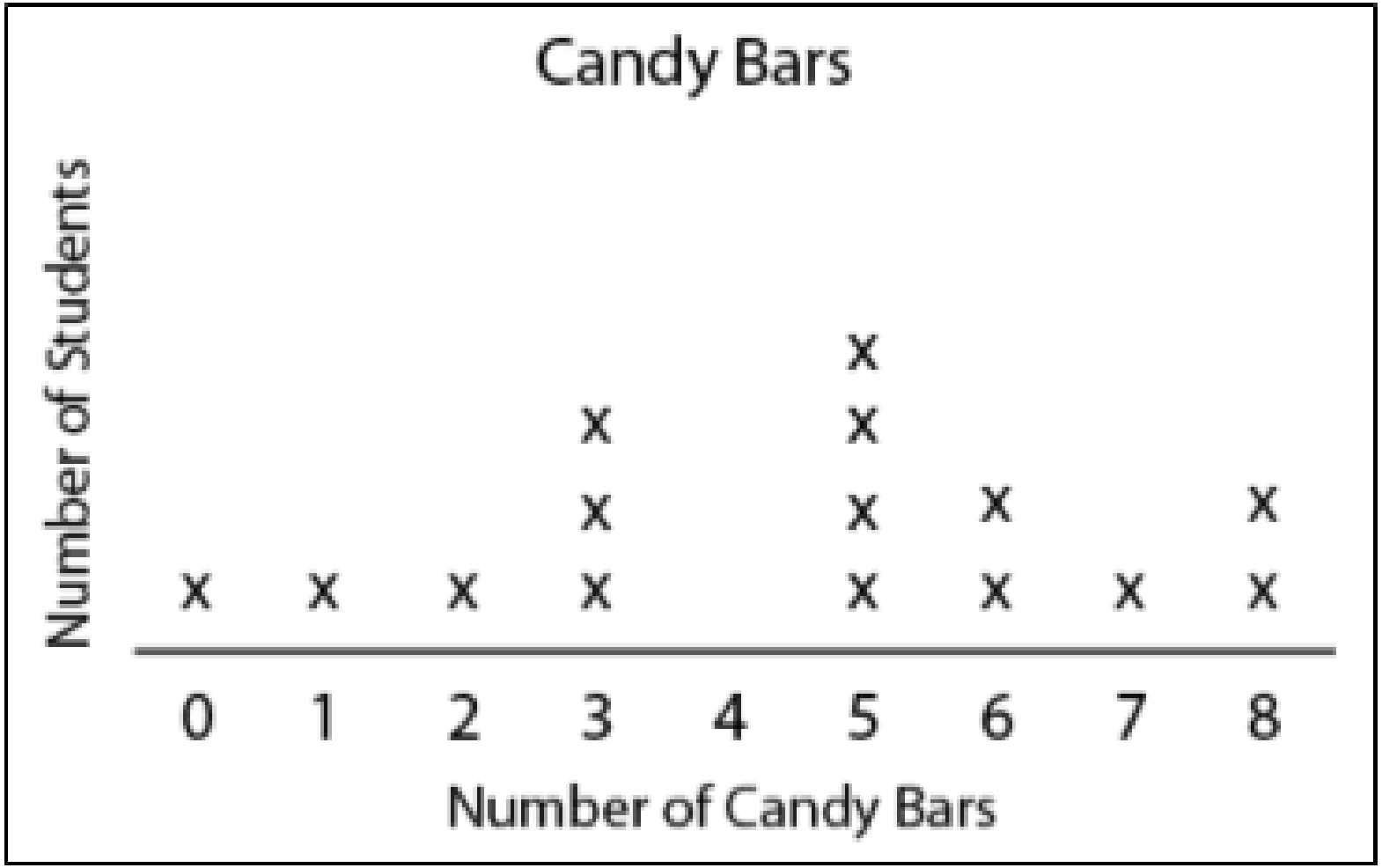
Indiana Academic M.A.T.H. Bowl

Area Alternate Round 2022

Begin Alternate Round

Mrs. West's class plotted how many candy bars they ate last week. How many students ate 5 candy bars?

A. 1
B. 2
C. 3
D. 4



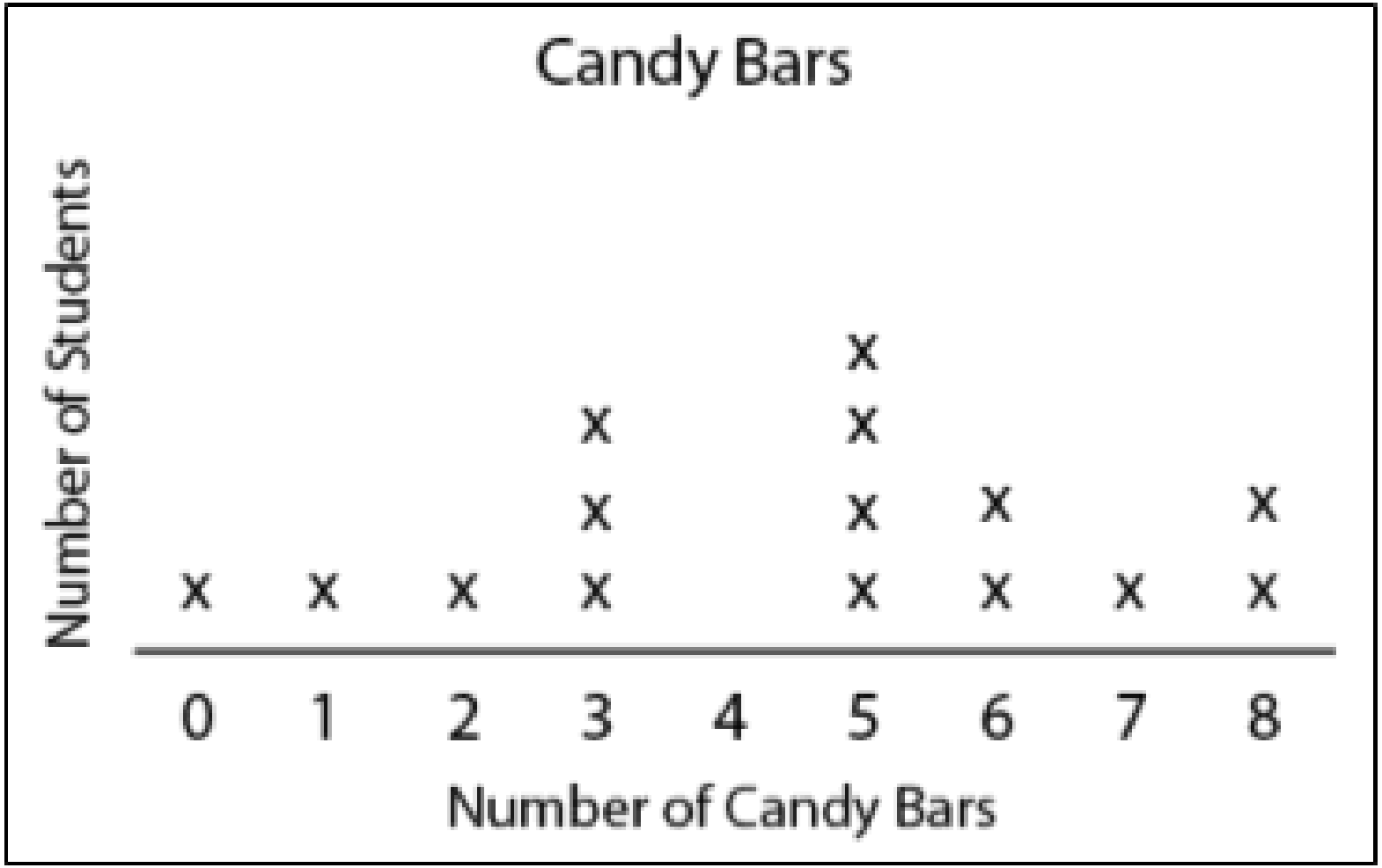
X = 1 student

2022 M.A.T.H. Area
Alternate Round, Question 1

30 second timer has started

Mrs. West's class plotted how many candy bars they ate last week. How many students ate 5 candy bars?

A. 1
B. 2
C. 3
D. 4



X = 1 student

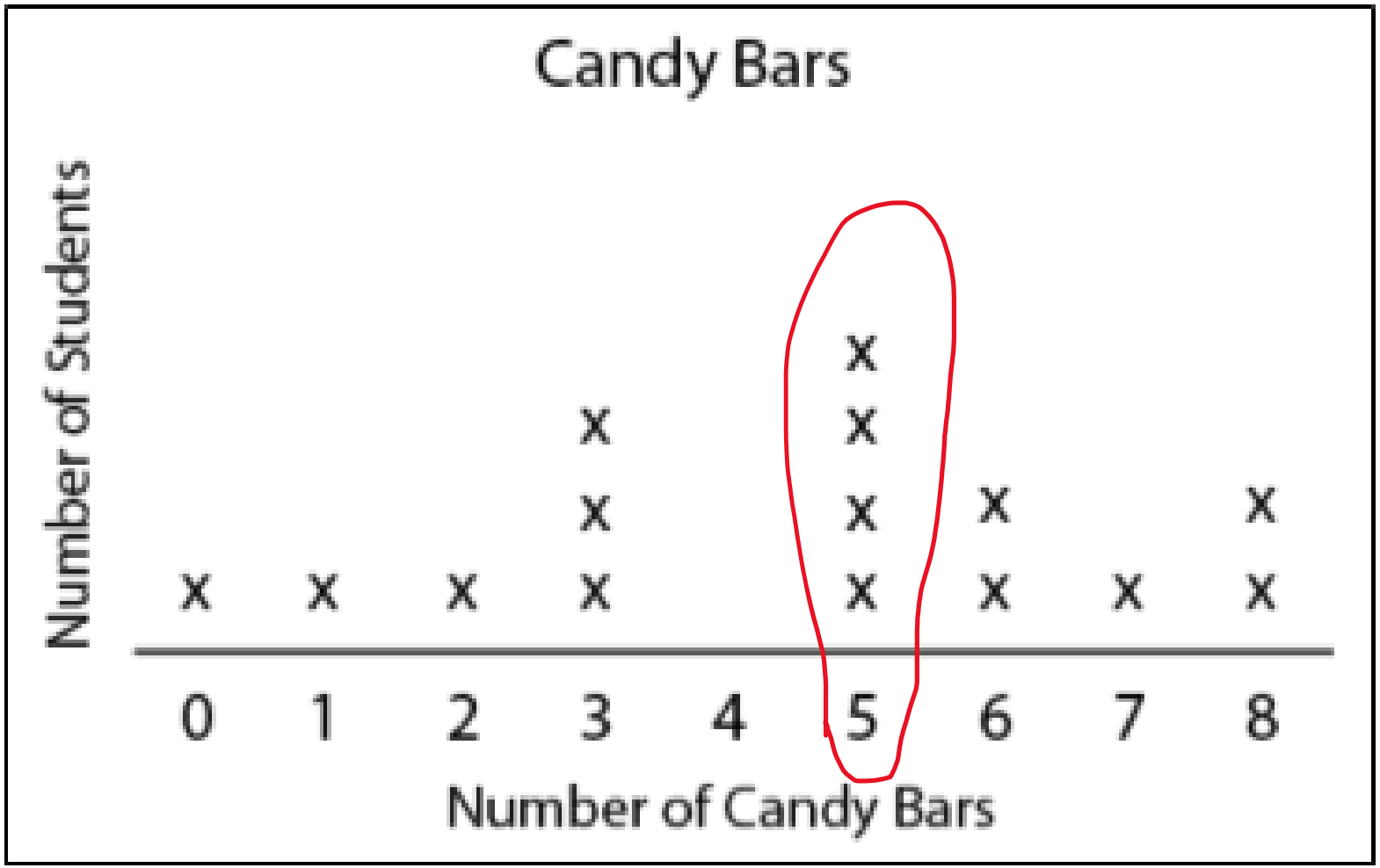
5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 1

Mrs. West's class plotted how many candy bars they ate last week. How many students ate 5 candy bars?

D. 4

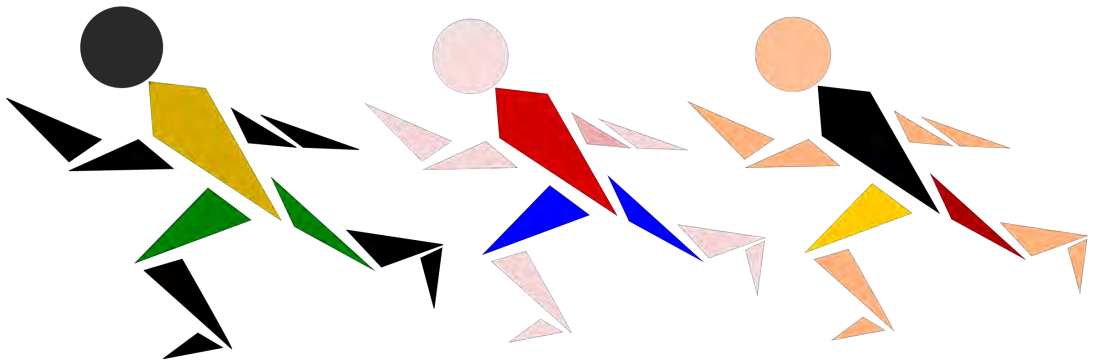


X = 1 student

45 seconds

Sam walked 4 miles and burned 300 calories on Monday. If the number of calories he burned while walking 3 miles on Tuesday is proportional with Monday, how many calories did he burn on Tuesday?

A. 220 calories
B. 200 calories
C. 240 calories
D. 225 calories

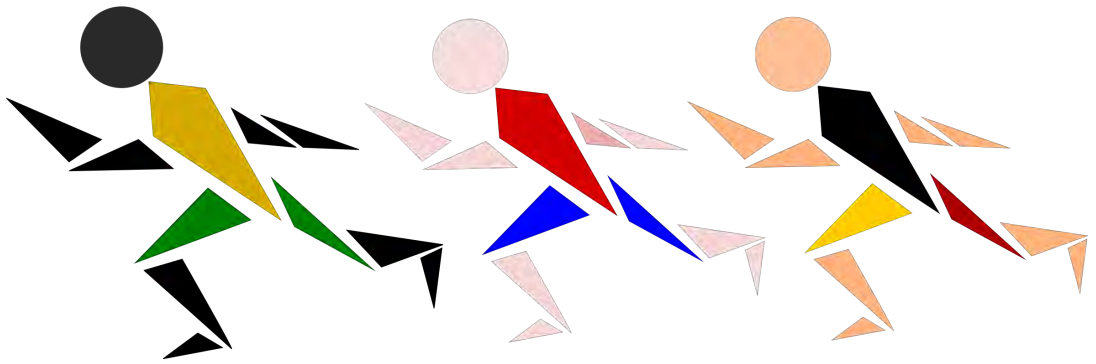


2022 M.A.T.H. Area
Alternate Round, Question 2

45 second timer has started

Sam walked 4 miles and burned 300 calories on Monday. If the number of calories he burned while walking 3 miles on Tuesday is proportional with Monday, how many calories did he burn on Tuesday?

A. 220 calories
B. 200 calories
C. 240 calories
D. 225 calories



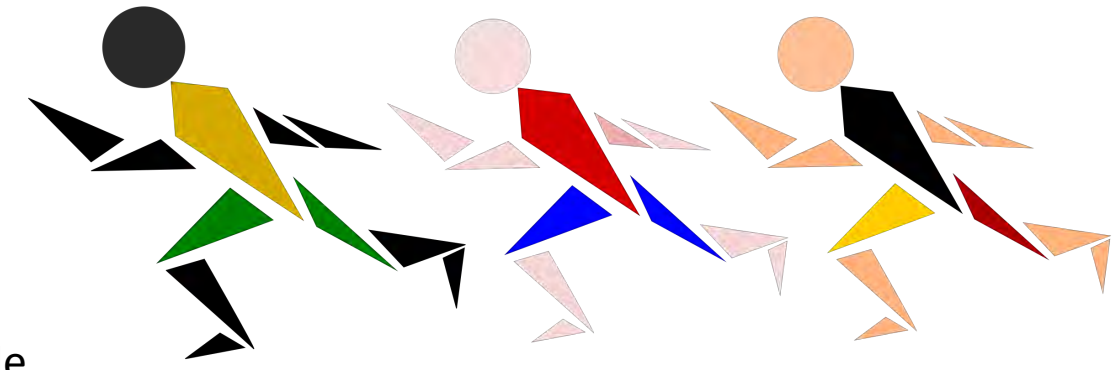
5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 2

Sam walked 4 miles and burned 300 calories on Monday. If the number of calories he burned while walking 3 miles on Tuesday is proportional with Monday, how many calories did he burn on Tuesday?

D. 225 calories



300 calories in 4 miles is 75 calories per mile.
75 calories times 3 hours is 225 calories

45 seconds

Patterns are found in nature as well as math. What is the next term in the famous mathematical pattern?

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

A. 41
B. 42
C. 53
D. 55

2022 M.A.T.H. Area
Alternate Round, Question 3

45 second timer has started

Patterns are found in nature as well as math. What is the next term in the famous mathematical pattern?

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

A. 41
B. 42
C. 53
D. 55

5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 3

Patterns are found in nature as well as math. What is the next term in the famous mathematical pattern?

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

This is the Fibonacci sequence.
Each term is the sum of the two before it.

21 + 34 = 55

D. 55

30 seconds

Jamal and Liam went to the mall. First, they spent an hour shopping for clothes followed by 1 hour and 30 minutes at the food court. Then, they spent 2 hours and 30 minutes at the video arcade before heading home at 3:15 p.m. What time did they start shopping for clothes?

A. 8:15 p.m.
B. 10:45 a.m.
C. 11:30 a.m.
D. 10:15 a.m.

2022 M.A.T.H. Area
Alternate Round, Question 4

30 second timer has started

Jamal and Liam went to the mall. First, they spent an hour shopping for clothes followed by 1 hour and 30 minutes at the food court. Then, they spent 2 hours and 30 minutes at the video arcade before heading home at 3:15 p.m. What time did they start shopping for clothes?

A. 8:15 p.m.
B. 10:45 a.m.
C. 11:30 a.m.
D. 10:15 a.m.

5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 4

Jamal and Liam went to the mall. First, they spent an hour shopping for clothes followed by 1 hour and 30 minutes at the food court. Then, they spent 2 hours and 30 minutes at the video arcade before heading home at 3:15 p.m. What time did they start shopping for clothes?

1 + 1:30 + 2:30 = 5 hours at the mall

5 hours before 3:15 p.m. is 10:15 a.m.

D. 10:15 a.m.

The Fishers have been married for $35\ {}^{1}/_{6}$ years. How many months have they been married?

A. 20 months
B. 422 months
C. 424 months
D. 432 months

2022 M.A.T.H. Area
Alternate Round, Question 5

45 second timer has started

The Fishers have been married for 35 $^{1}/_{6}$ years. How many months have they been married?

A. 20 months
B. 422 months
C. 424 months
D. 432 months

5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 5

The Fishers have been married for $35\ ^{1}/_{6}$ years. How many months have they been married?

B. 422 months

1 year = 12 months

35 years = 12(35) or 420 months
1/6 of a year = 2 months
Total 422 months

Three-fifths of the students in a class are boys. If there are 18 boys, how many total students are in the class?

A. 20 students
B. 12 students
C. 30 students
D. 35 students

2022 M.A.T.H. Area
Alternate Round, Question 6

45 second timer has started

Three-fifths of the students in a class are boys. If there are 18 boys, how many total students are in the class?

A. 20 students
B. 12 students
C. 30 students
D. 35 students

5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 6

Three-fifths of the students in a class are boys. If there are 18 boys, how many total students are in the class?

Let x = total number of students in class

$$3/5\ of\ X\ =\ 18$$

$$\frac{3x}{5} = 18$$

$$\frac{5(3x)}{3(5)} = \left(\frac{5}{3}\right)18$$

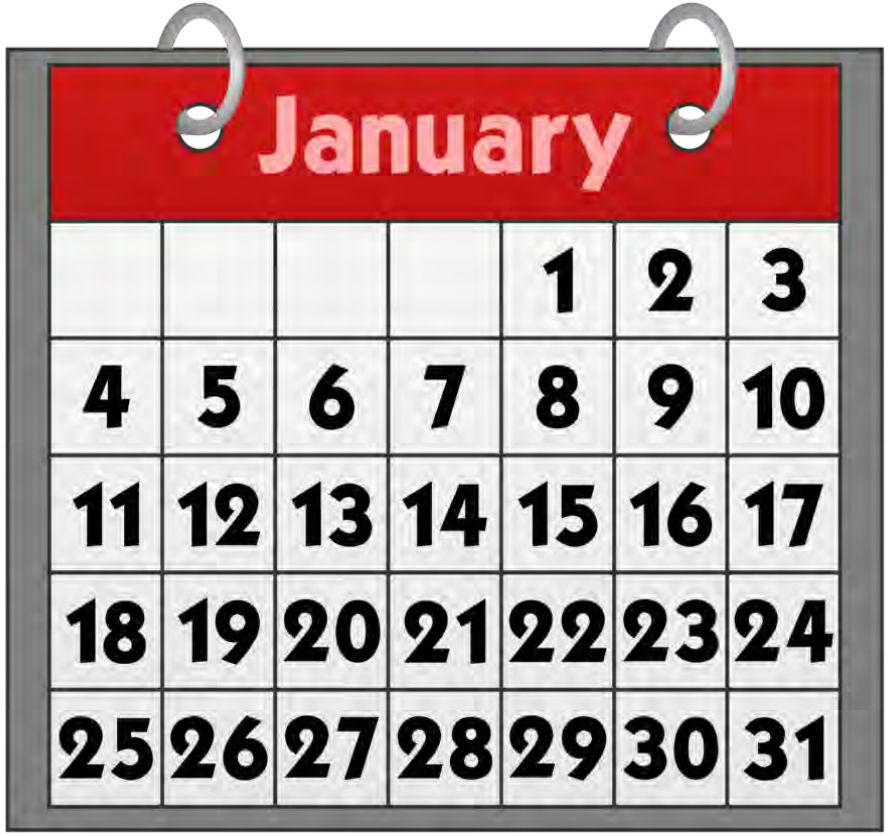
X = 30

Or check each answer
~~(3/5)20 = 12~~
~~(3/5)12 = 7.2~~
(3/5)30 = 18
~~(3/5)35 = 21~~

C. 30 students

What fractional part of a week is 12 hours?

A. 1/23
B. 7/12
C. 12/24
D. 1/14

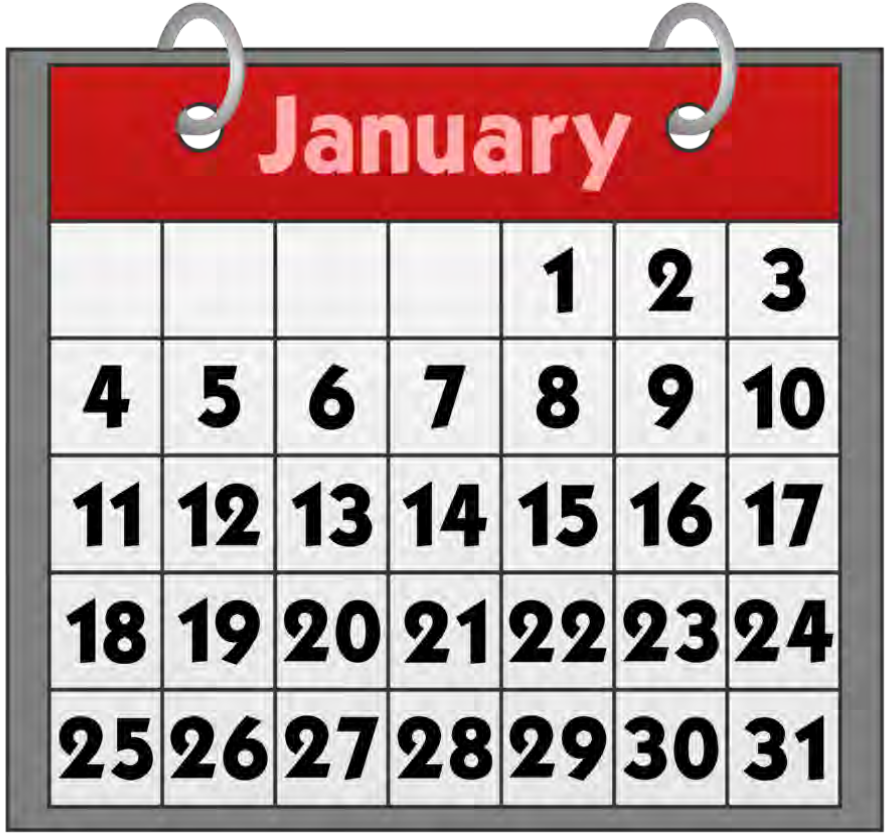


2022 M.A.T.H. Area
Alternate Round, Question 7

45 second timer has started

What fractional part of a week is 12 hours?

A. 1/23
B. 7/12
C. 12/24
D. 1/14



5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 7

What fractional part of a week is 12 hours?

D. 1/14

1 day is 24 hours
1 week is 7 days or 168 hours

12 hours is 12/168 or 1/14 of the week

How many 80-pound bags of sugar are there in 4 tons?

A. 40 bags
B. 20 bags
C. 400 bags
D. 100 bags

2022 M.A.T.H. Area
Alternate Round, Question 8

45 second timer has started

How many 80-pound bags of sugar are there in 4 tons?

A. 40 bags
B. 20 bags
C. 400 bags
D. 100 bags

5 seconds

Time is up.

2022 M.A.T.H. Area
Alternate Round, Question 8

How many 80-pound bags of sugar are there in 4 tons?

D. 100 bags

Know 1 ton is 2,000 pounds

So 4 tons are 8,000 pounds

8,000 / 80 = 100 bags