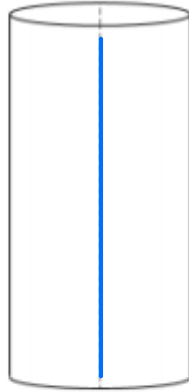
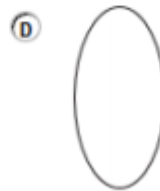
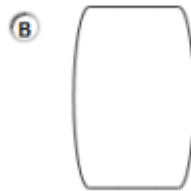
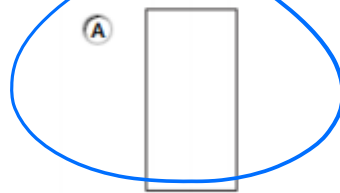


Question 1

A cylinder is sliced vertically along a dotted line, as shown.

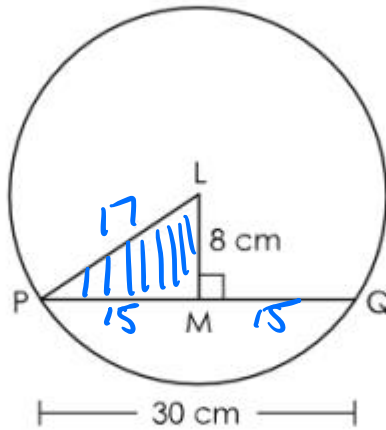


Which two-dimensional shape is created from this cross section?



Question 2

In the figure shown, L is the center of the circle and \overline{PQ} is a chord of the circle measuring 30 centimeters (cm).



$$\frac{PT}{8-15-17}$$

What is the length, in centimeters, of \overline{PL} ?

cm

$$\begin{aligned}(8)^2 + (15)^2 &= PL^2 \\ 64 + 225 &= PL^2 \\ 289 &= PL^2 \\ \pm 17 &= PL\end{aligned}$$

Question 4

A sequence of translations maps $\triangle GHI$ to $\triangle G'H'I'$.

- $\triangle GHI$ has vertices at $G(-8, 2)$, $H(13, 2)$, and $I(-2, 10)$.
- The coordinates of G' are $(-1, -3)$.

What are the coordinates for H' and I' ?

H' (,)

I' (,)

Translations T.4

Question 5

$$P(R \text{ or } D) = P(R) + P(D) - P(R \cap D) \\ = 0.50 + 0.48 - 0.25$$

A soccer coach determines that there is a 50% chance that a star player, Ralph, will play in a tournament.

- The probability that another star player, Dan, will play is 0.48.
- The probability that both Ralph and Dan will play in the tournament is 0.25.

Select phrases to complete the statement.

To find the probability that either Ralph or Dan will play in the tournament, first add and then .

Drop down choices

To find the probability that either Ralph or Dan will play in the tournament, first add and then .

0.50 and 0.48

0.50 and 0.25

0.48 and 0.25

subtract 0.25 from the sum.

multiply the sum by 0.48.

divide 0.50 by the sum.

subtract 0.50 from the sum.

multiply the sum by 0.25.

divide 0.48 by the sum.

Question 8

A survey was conducted to determine whether a group of 11th graders and 12th graders preferred to go to the amusement park or to the zoo for a class trip. The results are shown in the table.

	Amusement Park	Zoo
11th Graders	32	18
12th Graders	28	22

Based on the table, what is the probability that a student preferred a class trip to the zoo given they are in 11th grade?

$$\frac{18}{50} = 0.36 = 36\%$$

P.5 Review

$$P(Z | 11) = \frac{\# \text{ Zoo}}{\# 11} = \frac{18}{32+18} = \frac{18}{50}$$

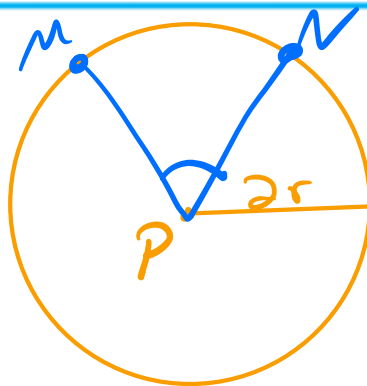
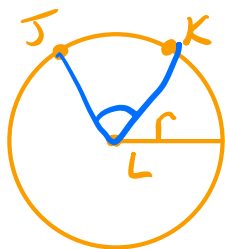
Question 10

A circle with center L contains points J and K . Circle L is dilated by a factor of 2, resulting in a new circle with center P . Points M and N are on circle P such that central angle MPN has the same measure as central angle JLK .

Which statement correctly identifies the relationship between the arc length of JK and the arc length of MN ?

- A The arc length of JK is half the arc length of MN .
- B The arc length of MN is half the arc length of JK .
- C The arc length of JK is a quarter of the arc length of MN .
- D The arc length of MN is a quarter of the arc length of JK .

Circle Dilation 12.3



Question 11

Point A is located at $(-1, -5)$. The midpoint of line segment AB is point C $(2, 3)$.

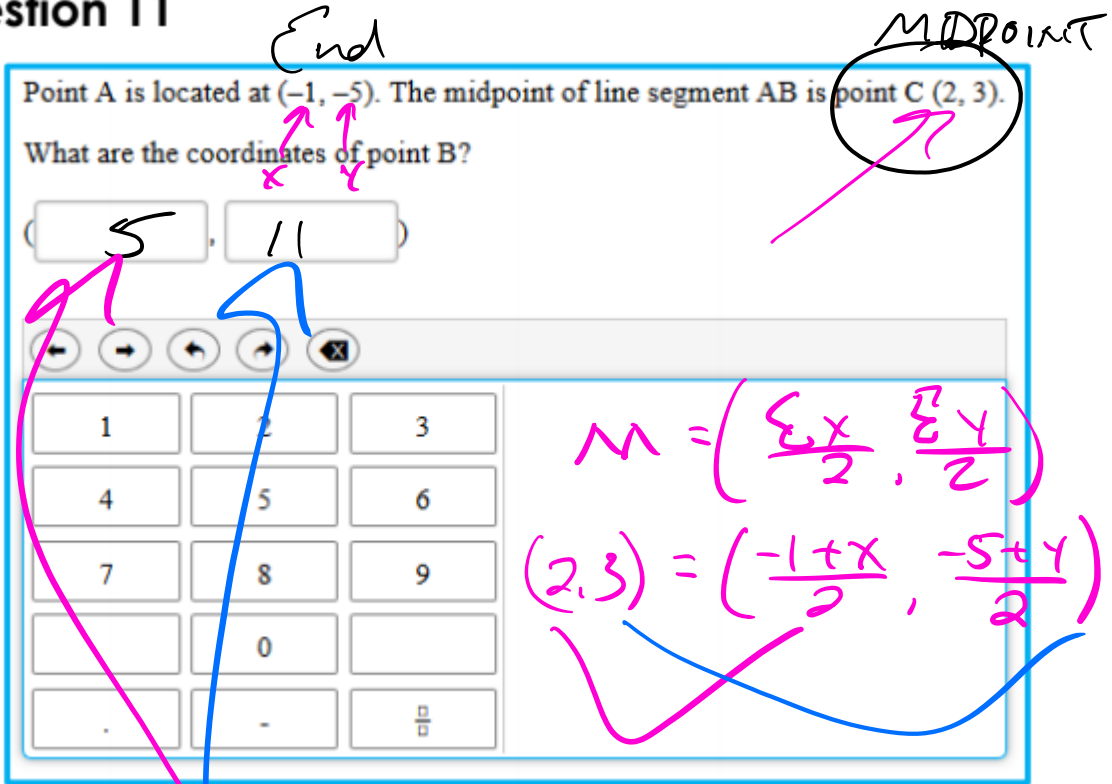
What are the coordinates of point B?

$($ $,$ $)$

Midpoint 1.2

Handwritten notes:

- End
- MIDPOINT
- $M = \left(\frac{\sum x}{2}, \frac{\sum y}{2} \right)$
- $(2, 3) = \left(\frac{-1+x}{2}, \frac{-5+y}{2} \right)$

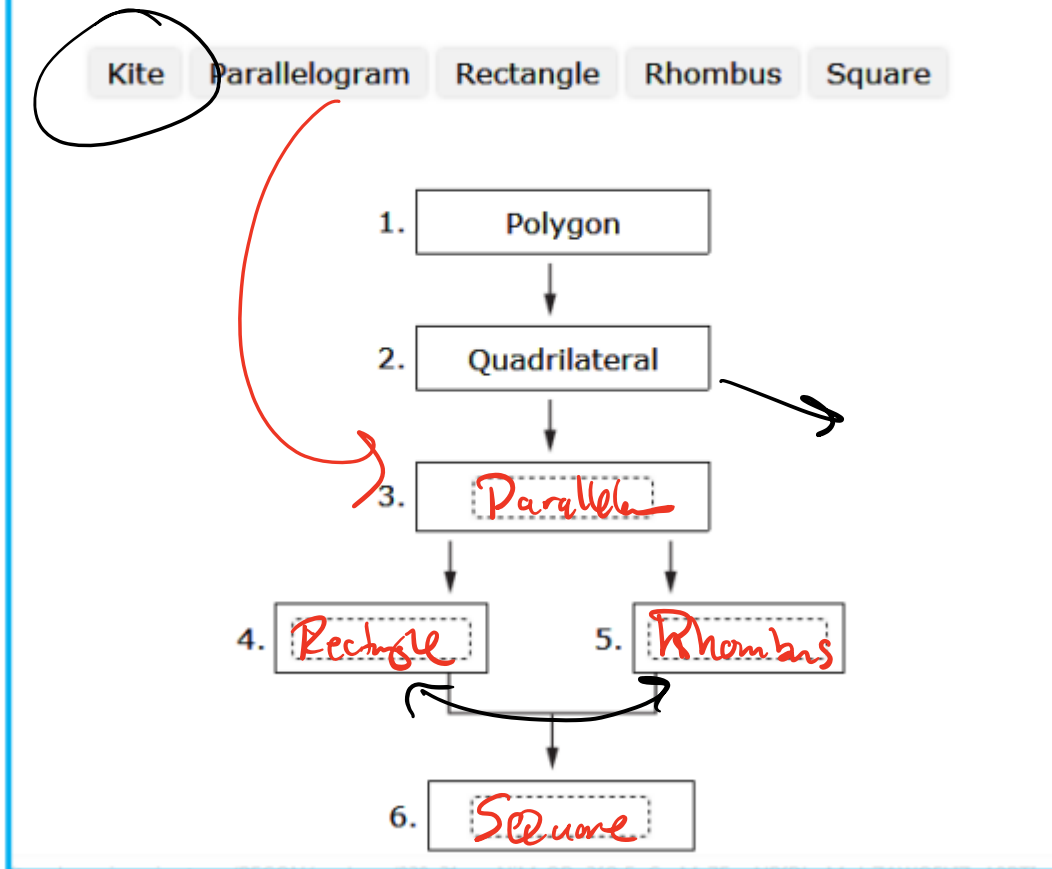


$$\begin{aligned} 2 &= \frac{-1+x}{2} & 3 &= \frac{-5+y}{2} \\ 4 &= -1+x & 6 &= -5+y \\ 5 &= x & 11 &= y \end{aligned}$$

Question 12

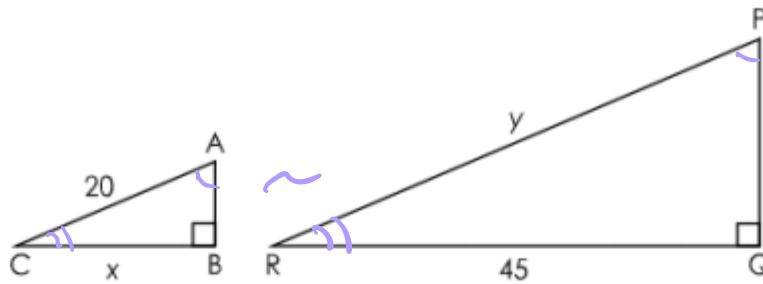
A partially completed chart shows the hierarchy of a set of polygons.

Move a term to each blank box to complete the chart.



Question 16

A teacher asked Dwayne to find the values of x and y in the triangles shown.



The teacher provided the following information about the triangles:

- Triangle ABC is similar to triangle PQR.
- In triangle ABC, $\cos(C) = 0.92$.

Dwayne claims that the value of x can be determined but the information provided is not sufficient to find the value of y .

Which statement about Dwayne's claim is accurate?

- $\cos(C) = 0.92 = \frac{x}{20}$
 $\cos(R) = 0.92 = \frac{45}{y}$
- (A) His claim is correct because $\cos(C) = \frac{20}{x}$ and 0.92 can be substituted for $\cos(C)$, but the cosine of angle R is not given for triangle PQR.
- (B) His claim is correct because $\cos(C) = \frac{x}{20}$ and 0.92 can be substituted for $\cos(C)$, but the cosine of angle R is not given for triangle PQR.
- (C) His claim is incorrect because $\cos(C) = \frac{20}{x}$, 0.92 can be substituted for $\cos(C)$, and since the triangles are similar, this ratio will be the same as $\frac{y}{45}$.
- (D) His claim is incorrect because $\cos(C) = \frac{x}{20}$, 0.92 can be substituted for $\cos(C)$, and since the triangles are similar, this ratio will be the same as $\frac{45}{y}$.

Question 20

In triangle ABC, $\angle A$ and $\angle B$ are complementary, where $\cos A = 0.5$.

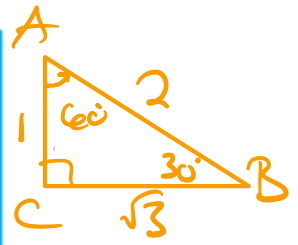
What is the measure, in degrees, of $\angle B$?

degrees

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
	0	
.	-	$\frac{\square}{\square}$

$\cos A = \frac{1}{2}$



or

$\cos A = 0.5$

$A = \cos^{-1}(0.5)$

$A = 60^\circ$

Question 21

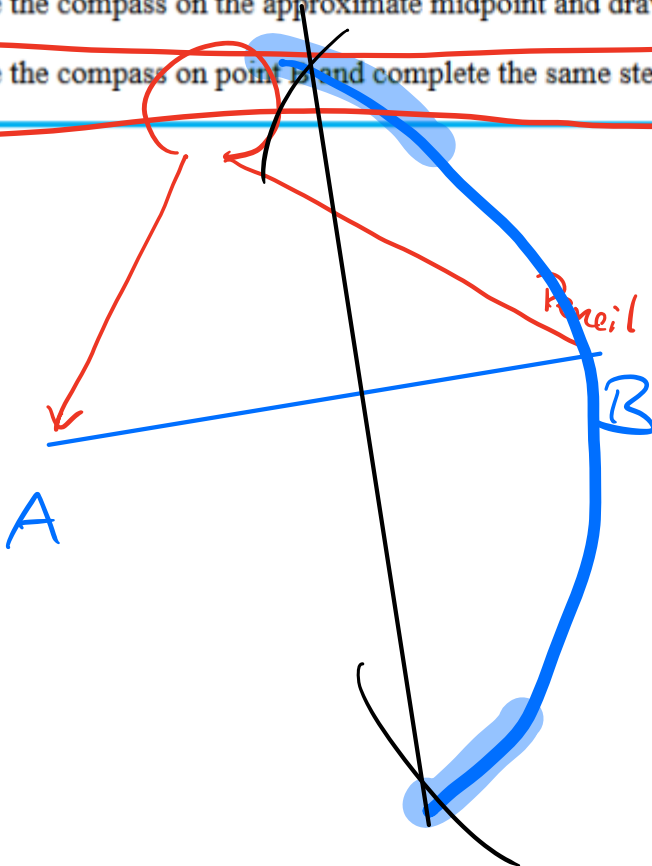
Trisha wants to create the perpendicular bisector of line segment AB.

She places her compass on point A and opens it with the width equal to the length of the line segment AB. She makes arcs above and below the line segment.

What could be Trisha's next step to create the perpendicular bisector of line segment AB?

- (A) connect the two arcs using a straightedge
- (B) connect each arc with point B using a straightedge
- (C) place the compass on the approximate midpoint and draw intersecting arcs
- (D) place the compass on point B and complete the same steps that she did for point A

div 1.2



Question 28

Bryan records the number of hours he sleeps each night for several days and whether it is raining in the morning when he wakes up. Bryan concludes that these two events are independent:

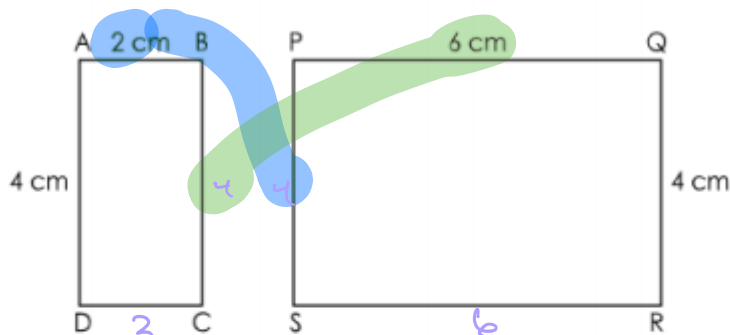
- Bryan sleeps 8 or more hours.
- It is raining in the morning.

Based on Bryan's conclusion, which statement must be true?

- (A) Bryan never sleeps 8 or more hours on days that it is not raining in the morning.
- (B) The probability that Bryan sleeps 8 or more hours is the same whether or not it is raining in the morning.
- (C) The probability that Bryan sleeps 8 or more hours is influenced by whether or not it is raining in the morning.
- (D) The probability that Bryan sleeps 8 or more hours is the same as the probability that it is raining in the morning.

Question 30

Consider the two rectangles shown.



$$\frac{2}{4} \neq \frac{4}{6}$$

$$\frac{1}{2} \neq \frac{2}{3}$$

Complete the sentence to determine whether the rectangles are similar.

Rectangle ABCD similar to rectangle PQRS because , so rectangle ABCD dilated to fit exactly over rectangle PQRS.

Drop down choices

Rectangle ABCD similar to rectangle PQRS because , so

is

is not

all rectangles are similar

all quadrilaterals are similar

their corresponding sides are congruent

their corresponding sides are not congruent

their corresponding sides are proportional

their corresponding sides are not proportional

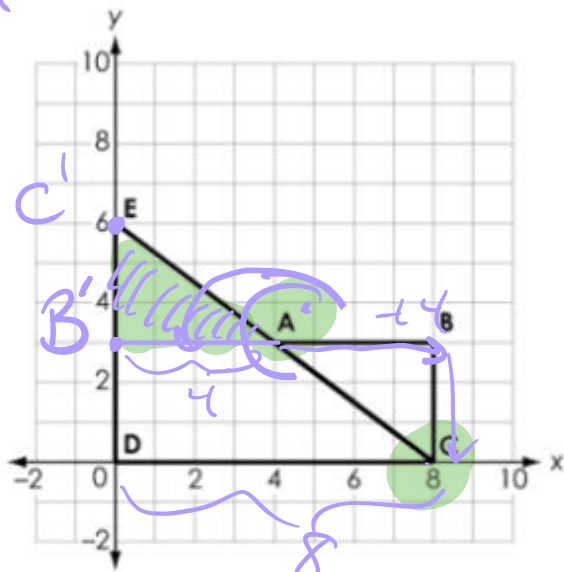
rectangle ABCD dilated to fit exactly over rectangle PQRS.

can be

cannot be

Question 33

Two triangles are shown on a coordinate grid.



Katie shows that the two triangles are similar by performing the following transformations:

- First, she rotates $\triangle ABC$ 180° about point A. ✓
- Then, she dilates $\triangle A'B'C'$ by a factor of k with a center of dilation at point A. ✓
- Finally, she translates $\triangle A''B''C''$ p units to the right and q units down to map onto $\triangle CDE$.

What are the values of k , p , and q ?

$k =$

$p =$

$q =$

Question 32

A university determined the number of students pursuing different degrees, by gender. Some of the results are shown.

	Undergraduate Degree	Master's Degree	Doctoral Degree	Total
Male	8250	3750	500	12,500
Female	8000	2,500	2000	12,500
Total	16,250	6,250	2,500	25,000

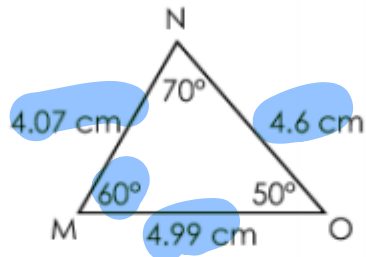
What is the probability that a female student chosen at random is pursuing an undergraduate degree?

$$P(u | F) = \frac{8000}{12,500}$$

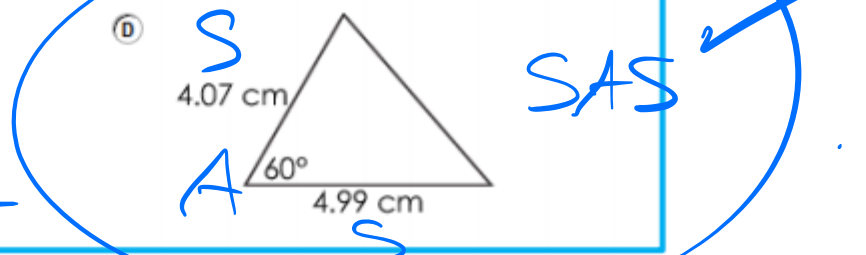
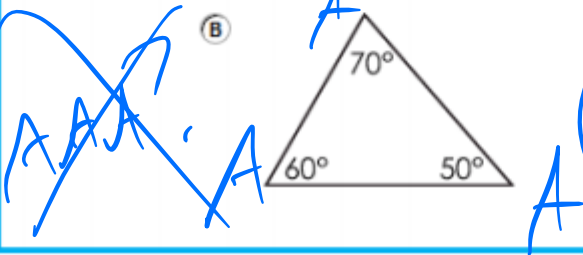
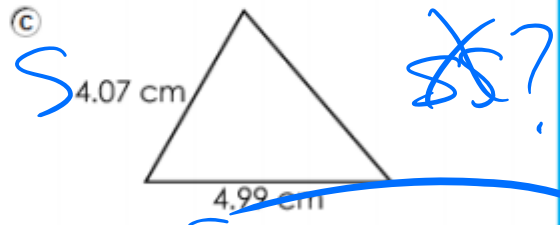
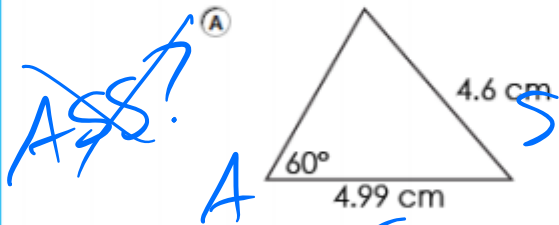
- (A) 18%
- (B) 32%
- (C) 36%
- (D) 64%

Question 34

Triangle MNO is shown.

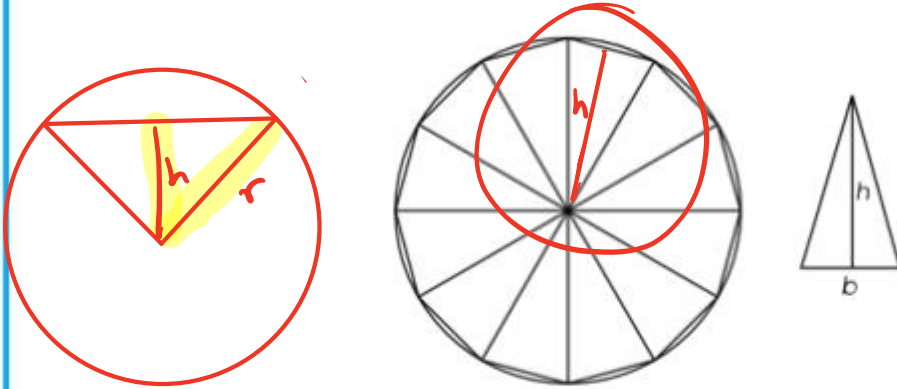


Which triangle can be shown to be congruent to triangle MNO with only the given information?



Question 36

To estimate the area of the circle, Henry divides a circle of radius r into n triangles, as shown, and uses the expression $\frac{h}{2}(b_1 + b_2 + \dots + b_n)$ to estimate the area of the circle. In the expression, variables b_1, b_2, \dots, b_n represent the base lengths of each triangle and h represents the height of each triangle.



$$A_{\odot} = \pi r^2$$

$$A_{\ominus} = \frac{hr}{2} (b_1 + b_2 + \dots + b_n)$$

$$= \pi r^2$$

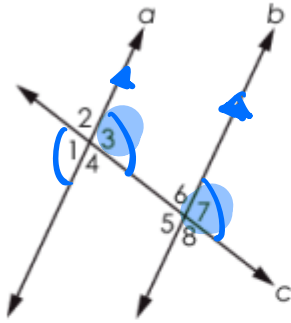
Henry claims that the more triangles the circle is divided into, the closer the estimated area will be to the actual area.

Which statement about Henry's claim is accurate?

- (A) His claim is accurate because as n gets larger, the value of h gets closer to the value of r and the value of $(b_1 + b_2 + \dots + b_n)$ approaches $2\pi r$.
- (B) His claim is accurate because as n gets larger, the value of h gets closer to the value of $2r$ and the value of $(b_1 + b_2 + \dots + b_n)$ approaches πr .
- (C) His claim is inaccurate because as n gets larger, the value of h gets closer to the value of r and the value of $(b_1 + b_2 + \dots + b_n)$ deviates from $2\pi r$.
- (D) His claim is inaccurate because as n gets larger, the value of h gets closer to the value of $2r$ and the value of $(b_1 + b_2 + \dots + b_n)$ deviates from πr .

Question 40

Two parallel lines, a and b , are cut by a transversal c as shown.



Drag a statement or reason to each blank in the table to complete the proof that $\angle 1 \cong \angle 7$.

Statements	Reasons
1. $a \parallel b$	1. Given
2. $\angle 1 \cong \angle 3$	2. <input type="text"/>
3. $\angle 3 \cong \angle 7$	3. <input type="text"/>
4. $\angle 1 \cong \angle 7$	4. <input type="text"/>

$\angle 1 \cong \angle 3$ $\angle 1 \cong \angle 4$ $\angle 1 \cong \angle 5$ $\angle 3 \cong \angle 5$

$\angle 3 \cong \angle 7$ $\angle 4 \cong \angle 6$ $\angle 5 \cong \angle 7$ $\angle 6 \cong \angle 7$

Transitive property Vertical angles are congruent.

Definition of supplementary angles.

Corresponding angles formed by parallel lines are congruent.

Alternate interior angles formed by parallel lines are congruent.

Alternate exterior angles formed by parallel lines are congruent.

*Proof: Alt Ext LS
Mean*

Question 41

A company wants to design a cylindrical object that has a height of 10 centimeters and a volume of at least 2,000 cubic centimeters, but not more than 2,500 cubic centimeters.

What is a possible radius in centimeters, of the cylinder? Round your answer to the nearest hundredth.

8.5

centimeters

$$V_{\pi} = A_{\text{Base}} \cdot h$$

$$V_{\pi} = \pi r^2 \cdot h$$

$$V_{\pi} = \pi r^2 \cdot 10$$

$$\frac{2000}{10} \leq \frac{\pi r^2 \cdot 10}{10} \leq \frac{2500}{10}$$

$$\frac{200}{\pi} \leq \frac{\pi r^2}{\pi} \leq \frac{250}{\pi}$$

$$\frac{200}{\pi} \leq r^2 \leq \frac{250}{\pi}$$

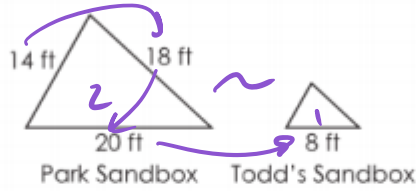
$$\sqrt{\frac{200}{\pi}} \leq r \leq \sqrt{\frac{250}{\pi}}$$

$$7.979 \leq r \leq 8.921$$

Question 49

A park has a triangular sandbox. Todd wants to create a smaller sandbox at his backyard having the same angles as the park sandbox.

Drawings of both sandboxes are shown.



$$\frac{8}{20} = \frac{P_{D1}}{P_{D2}}$$

$$\frac{2}{5} = \frac{P_{D1}}{52}$$

What is the perimeter, in feet (ft), of Todd's sandbox?

$$\frac{104}{5} = P_{D1}$$

ft 20.8

←	→	↶	↷	✖
1	2	3		
4	5	6		
7	8	9		
	0			
.	-	$\frac{\square}{\square}$		