G.CO.10 How do I construct the medians of a triangle?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 13, Lesson 1

1. Warm Up
2. TI-NSpire activity
3. Notes
4. Practice
5. Closure

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Medians of Triangle

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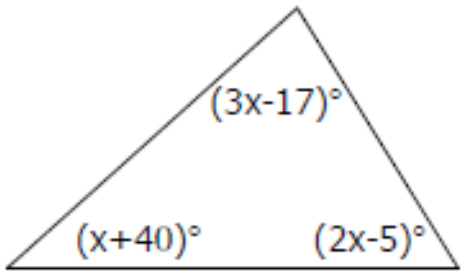
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm Up:

Given the diagram at the right.

Find the value of x and the measure of each angle.

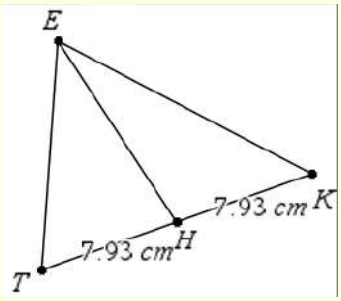


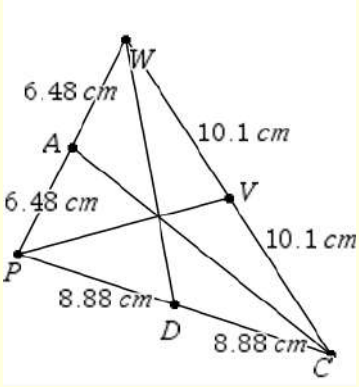
TI-NSpire Activity

Welcome to TI−NSpires!

To move through the tabs, you can use your mouse, or press [ctrl] and then left/right.

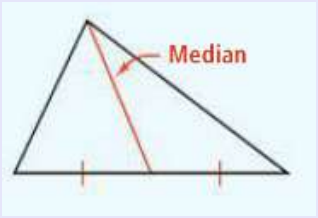
Please choose the correct answers for each question. If you need help, ask your team!



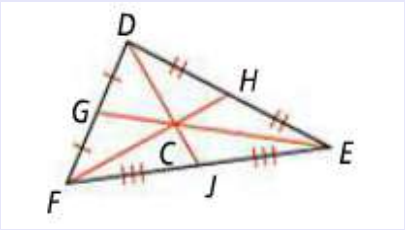


Median of a triangle

- a segment whose endpoints are a vertex and the midpoint of the opposite side

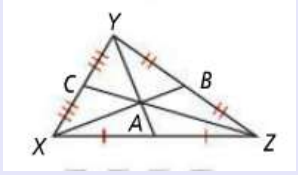


- the medians of a triangle meet at a point called the centroid



- The centroid is also called the *center of gravity* because it is the point where a triangular shape will balance.

- The centroid is two-thirds the distance from each vertex to the midpoint of the opposite side. (the ratio of the segments is 1:2)



Summary:

Quick Practice...
Using as much of the green paper as possible, cut out a scalene triangle.

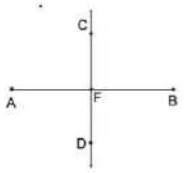
Then, construct its three medians.

Label the centroid point A.

Name _____ pd ____ IAN.page72

G.CO.10 Practice

1) Complete the following proof.

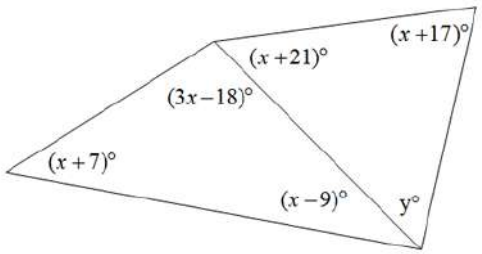


Given: $\overline{CD}$ is the perpendicular bisector of $\overline{AB}$

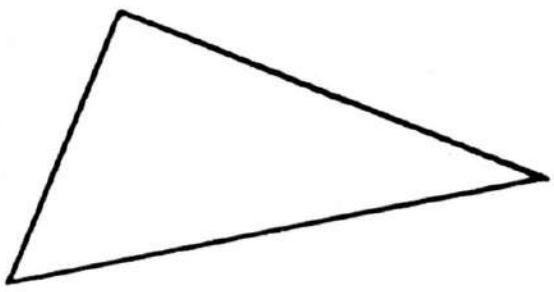
Prove: $\overline{AC} \cong \overline{BC}$

Statements	Reasons
1. $\overline{CD}$ is the perpendicular bisector of $\overline{AB}$	1. _____
2. $\overline{AF} \cong \overline{BF}$	2. _____
3. $\angle CFA$ and $\angle CFB = 90°$	3. _____
4. $\angle CFA \cong \angle CFB$	4. _____
5. $\overline{CF} \cong \overline{CF}$	5. _____
6. $\triangle CFA \cong \triangle CFB$	6. _____
7. $\overline{AC} \cong \overline{BC}$	7. _____

2) Determine the values of the unknown variables.



3) Given the scalene triangle below, construct its three medians and label the centroid as point B.



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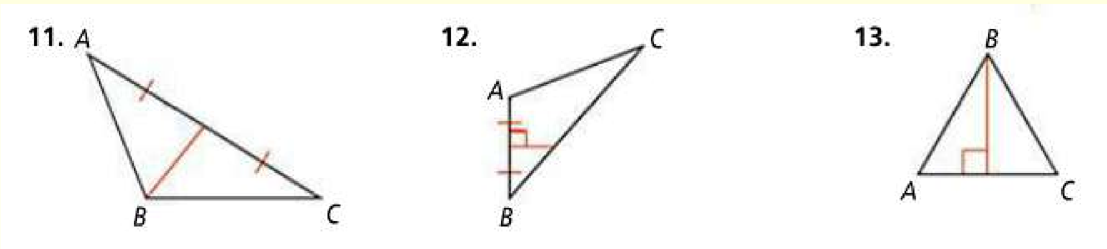
Right Side...

Write a summary that answers the essential question.

Left Side...

Which of the following shows a median? How do you know?



EQ: G.CO.13 How do I inscribe an equilateral triangle in a circle?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 13, Lesson 2

1. Warm Up
2. G.CO.10 Quiz
3. Notes
4. Practice
5. Closure

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Inscribe a Triangle in a Circle

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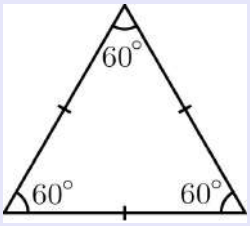
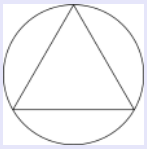
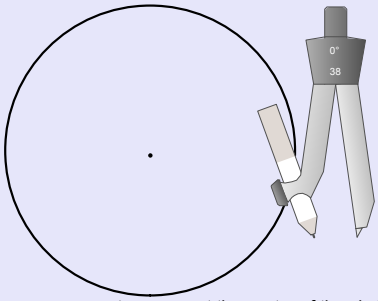
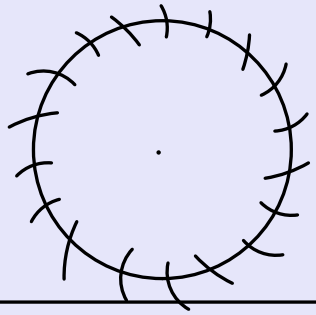
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm Up:

To prepare for the quiz, take a few minutes to review pages 66-73 in your IAN.
Then, self-assess with the following questions:
1. Do you know how to complete a proof?
2. Do you know how to solve equations involving the angles of a triangle?
3. Do you know how to construct the medians of a triangle?
4. Can you do all of the questions on the G.CO.10 practice on page 72?

G.CO.10 Quiz!

notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes -

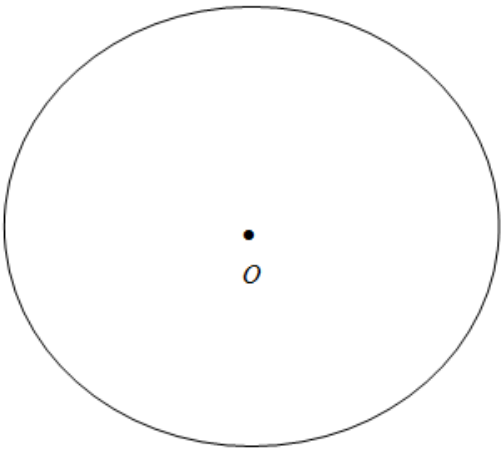
equilateral triangle	- triangle with 3 equal sides AND 3 equal angles (60° each) 
inscribe	- "enclosed by" - all the vertices of the object touch the other object 
inscribing an equilateral triangle in a circle	 0. Put a point on your paper to represent the center of the circle. 1. Draw a circle. Mark the center. 2. Put a point on the circumference of the circle; measure the radius (distance from center to the mark). 3. Make a mark on the circumference of the circle. Then, with your compass point at that mark, make another mark on the circumference of the circle. Continue around the circle until you have 6 marks. 4. Connect every other mark with a straight edge. Different Example! Given the circle below, use the construction marks given to inscribe an equilateral triangle. 

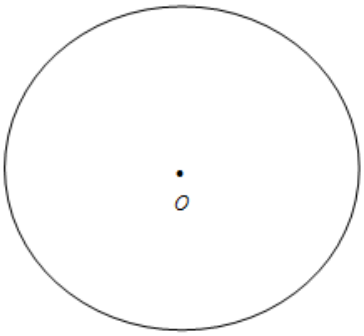
Summary:

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

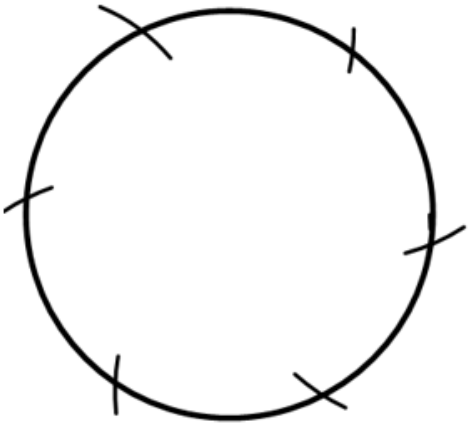
Name _____ pd _____ IAN.page74

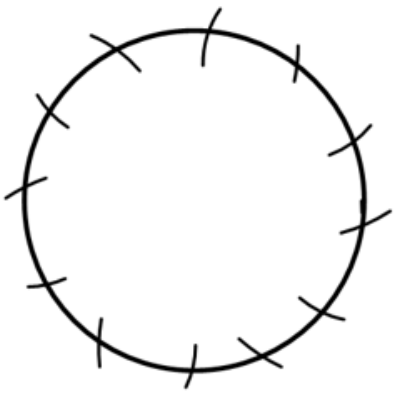
1. Construct an equilateral triangle inscribed each of the following two circles.





2. Given the following circles, use the construction marks given to construct an equilateral triangle inscribed in each circle.





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Right Side...

Write a summary that answers the essential question.

Left Side...

EQ: G.SRT.5 How do I use congruence to solve problems?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 13, Lesson 3

1. Warm Up
2. Practice
3. SRT.5 Quiz
4. Closure

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Congruence Problems

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Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

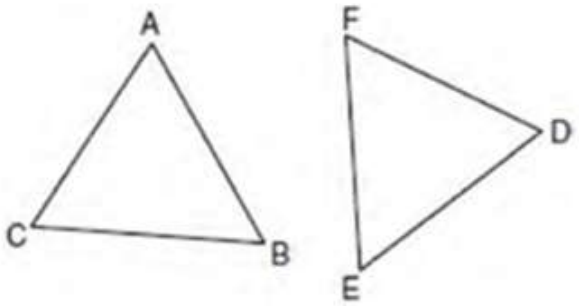
Warm Up:

In the diagram at the right, $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$ and $\angle B \cong \angle E$.

1) How are the two triangles congruent?

2) Is $\angle C \cong \angle E$? Why or why not?

3) Is $\overline{AC} \cong \overline{DF}$? Why or why not?



Construct an equilateral triangle inscribed in a circle.

SRT.5 Congruence Practice

#1 - The diagram at the right shows a pair of congruent triangles.

Which statement must be true? Circle all that apply.

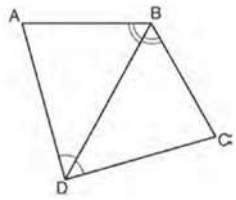
a) $\angle ADB \cong \angle CBD$

b) $\angle ABC \cong \angle ADC$

c) $\angle BAD \cong \angle BCD$

d) $\overline{AB} \cong \overline{CD}$

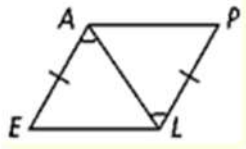
e) $\overline{AD} \cong \overline{CD}$



#2 – Given the diagram at the right,

(a) Can you prove that $\triangle EAL$ is congruent to $\triangle PLA$? If so, how? If not, what information are you missing?

(b) Is $\triangle EAL$ an isosceles triangle? Why or why not?



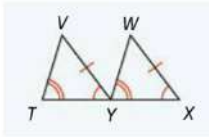
3. Given the picture to the right, which of the following statements MUST be true?

(a) $\triangle TVY \cong \triangle XWY$

(b) $\overline{TV} \cong \overline{WY}$

(c) $\angle T \cong \angle W$

(d) $\angle VYT \cong \angle WXY$



4. If $\triangle DEG \cong \triangle XTP$, which of the following statements MUST be true? Circle all that apply.

(a) $\triangle GED \cong \triangle TXP$

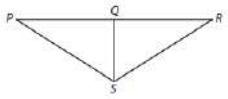
(b) $\overline{DG} \cong \overline{XT}$

(c) $\angle G \cong \angle P$

(d) $\overline{TP} \cong \overline{GE}$

(e) $\angle EDG \cong \angle TXP$

5. Determine whether each of the following provides enough information to prove that $\triangle SQP \cong \triangle SQR$. Select the correct answer for each lettered part.



a. Q is the midpoint of $\overline{PR}$.	◯ Yes	◯ No
b. $\angle P \cong \angle R$	◯ Yes	◯ No
c. $\angle SQP$ is a right angle, $\angle PSQ \cong \angle RSQ$	◯ Yes	◯ No
d. $\angle SQP$ is a right angle, $m\angle P = 32°$, $m\angle RSQ = 58°$.	◯ Yes	◯ No
e. $\angle P \cong \angle R$, $\angle PSQ \cong \angle RSQ$	◯ Yes	◯ No

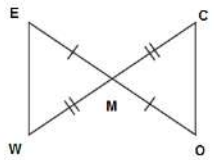
6. Given the diagram at the right,

(a) Why are the two triangles shown at the right congruent? _____

(b) If $\overline{EM} = 5x - 15$ and $\overline{OM} = 8x - 45$, find the value of x and the length of $\overline{EO}$.

x = _____

$\overline{EO}$ = _____

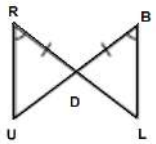


7. Given the diagram at the right,

(a) If $\angle RUD = 8x + 10$ and $\angle BLD = 4x + 50$, find the value of x and the $m\angle RUD$.

x = _____

$m\angle RUD$ = _____



(b) Explain how the triangles are congruent.

_____

SRT.5 Quiz

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

Triangle Choice Boards!

Triangle Choice Board Name _____ pd ____

5 pts	1) The following motion rule is applied to ΔABC : (x,y) →(x,-y) Are the two triangles congruent? Why or why not?	2) The following motion rule is applied to ΔABC : (x,y) →(y,-x) Are the two triangles congruent? Why or why not?	3) The following motion rule is applied to ΔABC : (x,y) →(x+4,y-1) Are the two triangles congruent? Why or why not?

10 pts	**20 pts**	**50 pts**

Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure

Right Side...

Write a summary that answers the essential question.

Left Side...

SRT.8 How do I apply the Pythagorean Theorem?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 13, Lesson 4
1. Warm Up
2. Notes
3. Left-Side Practice
4. Independent Practice
5. Closure

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Apply Pythagorean Theorem

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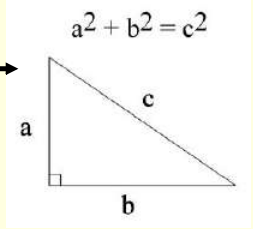
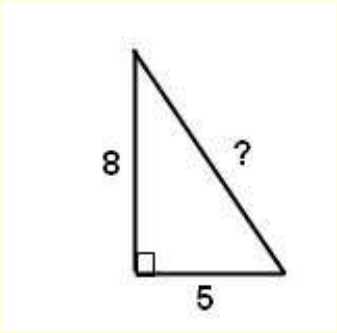
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

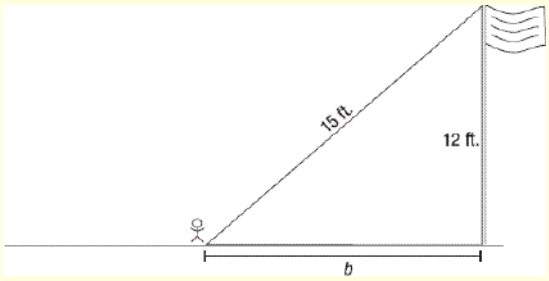
Warm Up:

Pythagorean Theorem →

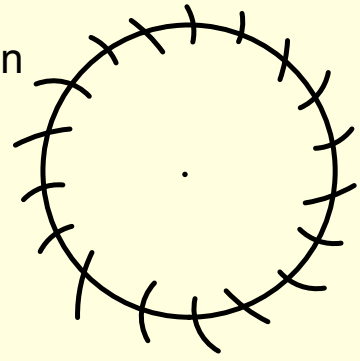


1) Redraw each triangle in your IAN.
2) Then, label each side as "a", "b", or "c."
3) Finally, using the Pythagorean Theorem, find the missing side lengths.





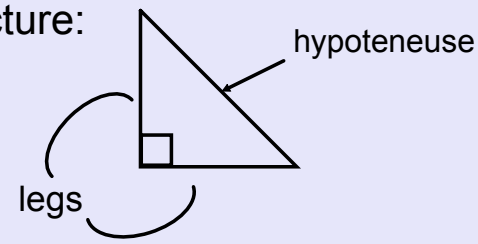
4) Given the circle at the right. Explain how to use the construction marks given to inscribe an equilateral triangle.



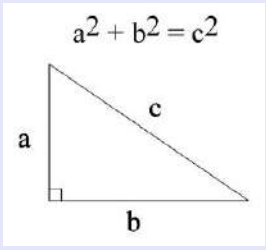
Right triangles

Definition: Any triangle that has a right angle

Picture:

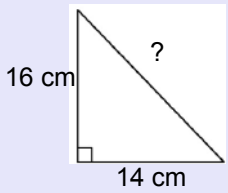


Pythagorean Theorem: If you know 2 sides of a right triangle, you can use the formula to find the 3rd side.

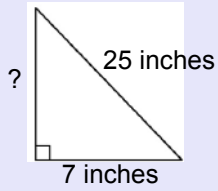


a is a leg
b is a leg
c is the hypoteneuse

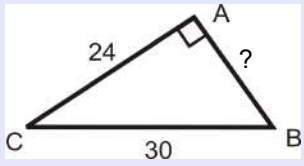
Example 1:



Example 2:



Example 3:



Summary:

Left-Side Practice

1. John leaves school to go home. He walks 6 blocks North and then 8 blocks west.

(a) Draw a picture

(b) How far is John from the school?

(c) How much less distance would he walk by going the direct route?

2. Janet places a ladder on level ground against a vertical wall. When the base of the ladder is 21 feet from the wall, the ladder reaches a height of 16 feet along the wall.
(a) Draw a picture.

(b) How long is the ladder?

(c) Janet then moves the base of the ladder 5 feet closer to the wall. How high does the ladder reach now?

4. Scott is planning a camp out and found an extra tent, except it doesn't have the support pole. If the tent is 78 inches on the bottom and 42 inches on each side, to the nearest inch, how tall of a stick does he need to find?

Name _____ pd _____ IAN.page78

SRT.8 Practice #1

1. **Diego places a ladder on level ground against a vertical wall. When the base of the ladder is 10 feet from the wall, the ladder reaches a height of 7 feet along the wall.**
(a) Draw a picture to represent this scenario in the box at the right.
(b) Calculate the height of the wall.

(c) If Diego moves the base of the ladder 3 feet closer to the wall, how high up the wall does the ladder now reach? Draw a picture to represent this new scenario before solving it.

2. **A piece of square fabric has a side length of 10 inches.**
(a) Draw a picture to represent this scenario in the box at the right.
(b) You are making a quilt and want to put lace along the diagonal of this fabric. How much lace will you need for one piece of fabric?

(b) Your quilt will have 15 of these pieces of fabric. How much total lace will you need?

(c) If lace cost $1.20 per inch, how much can you expect to pay?

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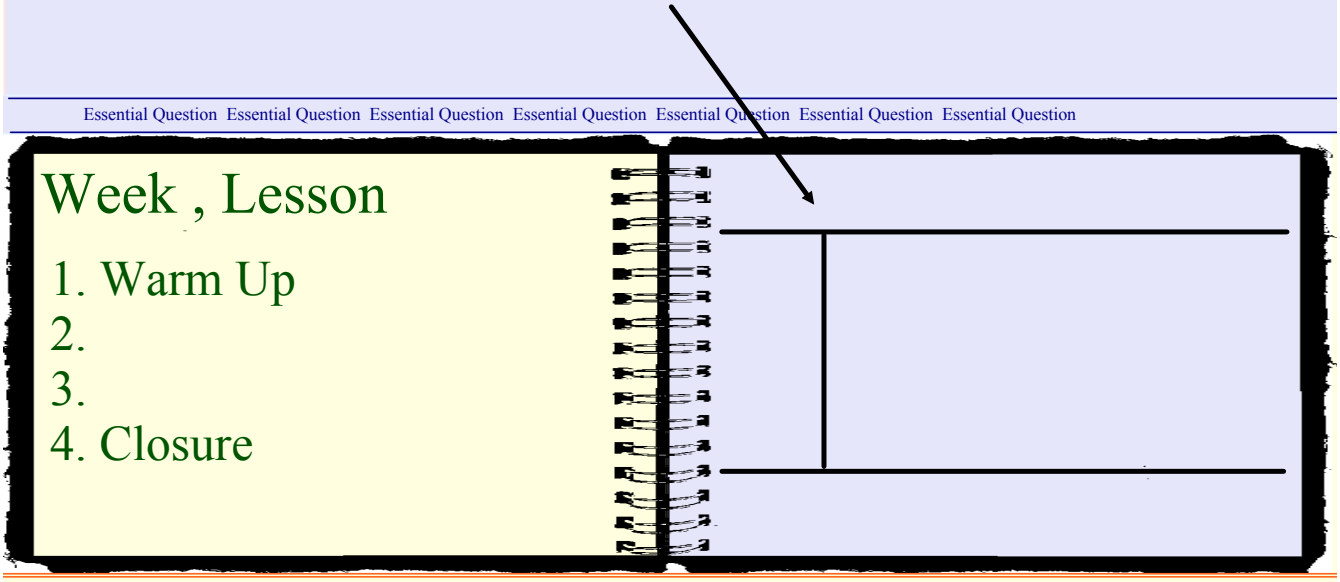
Right Side...

Write a summary that answers the essential question.

Left Side...

EQ:

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question



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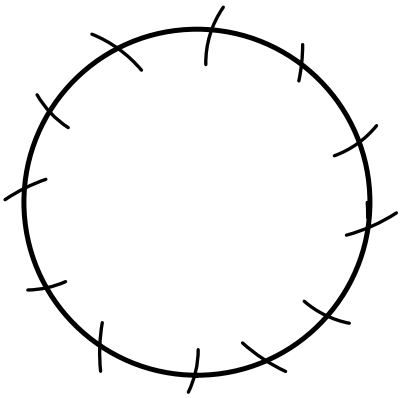
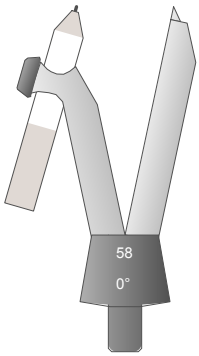
Warm Up:

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