4. Fi

Review: $180(n-2)$

How many sides does a polygon with an interior angle sum of 4140 degrees have? 25

What is the measure of the exterior angle of a regular dodecagon?

$\frac{360}{12} = 30°$

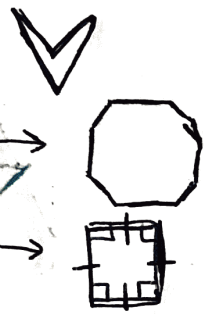
What is the measure of each angle in a regular octagon? $\frac{(8-2)(180)}{8} = 135°$

Draw a picture of the following:

a) A concave quadrilateral

b) A convex nonagon

c) A regular quadrilateral

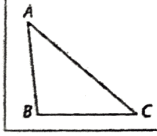


Angle Chasing Worksheet

Triangle Inequality Theorem

Triangle Inequality Theorem

The sum of any two side lengths of a triangle is greater than the third side length.



$AB + BC > AC$

$BC + AC > AB$

$AC + AB > BC$

Tell whether a triangle can have the following side lengths:

7, 10, 19 No $7+10 \not> 19$

2.3, 3.1, 4.6 Yes

12, 4, 17 No

24, 8, 30 Yes

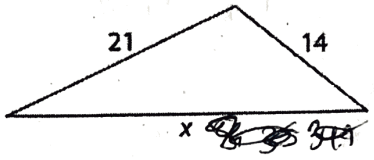
The lengths of two sides of a triangle are 8 inches and 13 inches. Find the range of possible lengths for the third side.

$5 < x < 21$

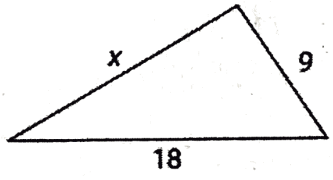
The lengths of two sides of a triangle are 22 inches and 17 inches. Find the range of possible lengths for the third side.

$5 < x < 39$

Find the range of possible lengths for the third side of each triangle.

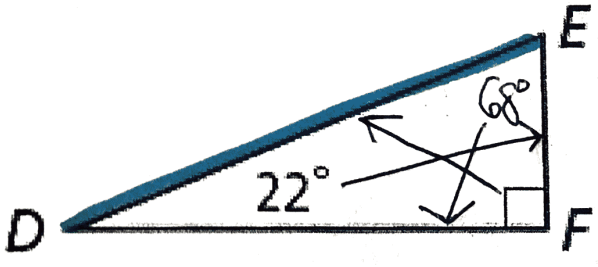


$7 < x < 35$

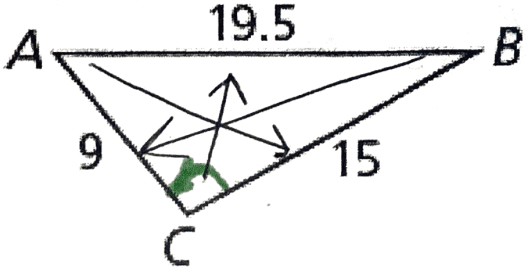


$9 < x < 27$

Which side is the longest?



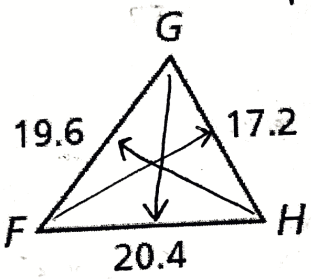
Which angle is the largest?



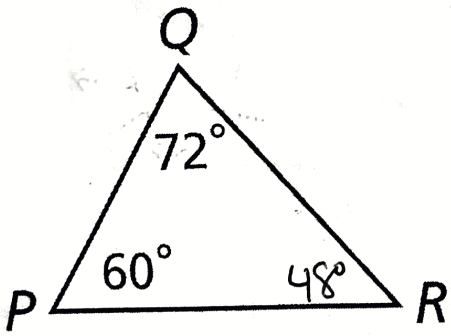
The largest angle is opposite the longest side in any given triangle.

Write the angles in order from smallest to largest.

F, H, G



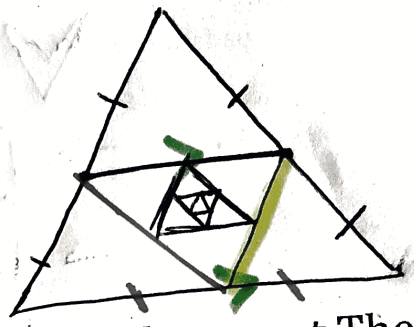
Write the sides in order from shortest to longest.



$\overline{PQ}$, $\overline{QR}$, $\overline{PR}$

Midsegments of Triangles

The **midsegment** of a triangle is a line segment that connects the midpoints of two sides of the triangle. Every triangle has three midsegments.



Triangle Midsegment Theorem

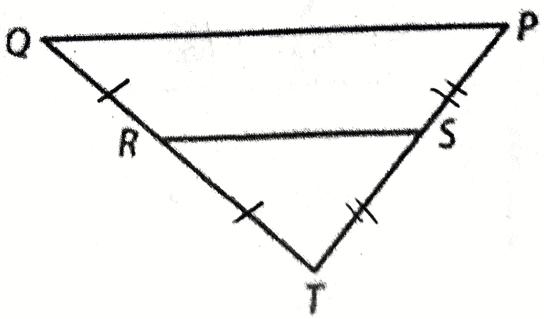
The segment joining the midpoints of two sides of a triangle is parallel to the third side, and its length is half the length of that side

In the figure, R and S are the midpoints of $\overline{QT}$ and $\overline{PT}$.

$\overline{RS}$ is parallel to $\overline{QP}$.

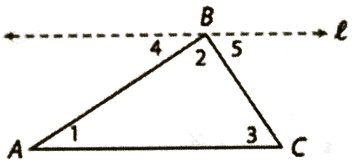
If $QP = 16$, then $RS =$ 8.

If $RS = 9$, then $QP =$ 18.

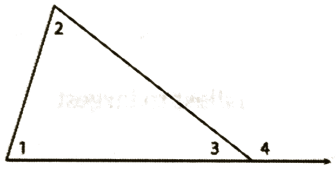


Review Sheet

Proofs We Have Discussed and will be on the quiz



Statements	Reasons
~~4. Draw line ℓ through point B parallel to $\overline{AC}$.~~	~~1. Parallel Postulate~~
2. $m\angle 1 = m\angle$ 4 and $m\angle 3 = m\angle$ 5	2. Alternate Interior Angles Theorem
3. $m\angle 4 + m\angle 2 + m\angle 5 = 180°$	~~3. Angle Addition Postulate and definition of~~ straight angle
4. $m\angle$ 1 $+ m\angle 2 + m\angle$ 3 $= 180°$	4. Substitution Property of Equality



By the **Triangle Sum Theorem**, $m\angle 1 + m\angle 2 + m\angle 3 = 180°$.

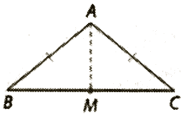
Also, $m\angle 3 + m\angle 4 =$ **180°** because they are supplementary and make a straight angle.

By the Substitution Property of Equality, then, $m\angle 1 + m\angle 2 + m\angle 3 = m\angle$ **3** $+ m\angle$ **4**.

Subtracting $m\angle 3$ from each side of this equation leaves **$m\angle 1 + m\angle 2 = m\angle 4$**.

This means that the measure of an exterior angle of a triangle is equal to the sum of the measures of the remote interior angles.

Critical Thinking Prove $\angle B \cong \angle C$, given point M is the midpoint of $\overline{BC}$.



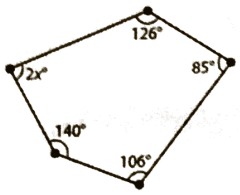
Statements	Reasons
1. M is the midpoint of $\overline{BC}$.	1. Given
2. $\overline{BM} \cong \overline{CM}$	2. Definition of midpoint
3. $\overline{AB} \cong \overline{AC}$	3. Given
4. $\overline{AM} \cong \overline{AM}$	4. Reflexive Property of Congruence
5. $\triangle AMB \cong \triangle AMC$	5. SSS Triangle Congruence Theorem
6. $\angle B \cong \angle C$	6. CPCTC

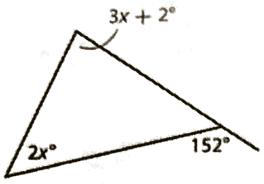
1. How do you find the sum of the interior angles of a polygon?

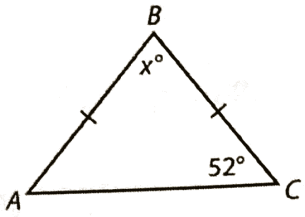
2. How many sides does a polygon with an interior angle sum of 2700° have?

3. What is the measure of an interior angle of a regular pentagon?

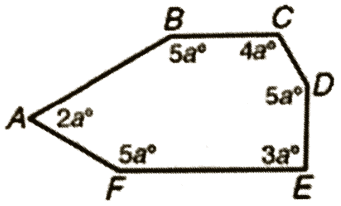
4. Find the value of x in each.



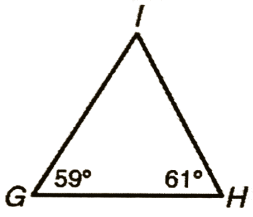




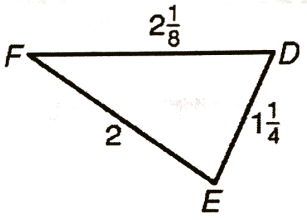
Find the value of a. →



5. Name the sides from smallest to largest.



6. Name the angles in order from smallest to largest.



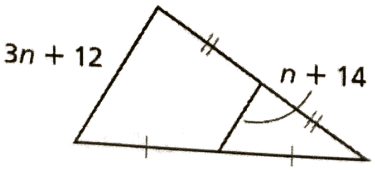
7. Can three segments with lengths 8, 15, and 6 make a triangle? Explain your answer.

8. Can a triangle be made from the side lengths 3, 3, and 6? Explain.

9. A triangle has sides 3 cm and 8 cm. What are the possible side lengths of the third side?

10. What is a midsegment of a triangle?

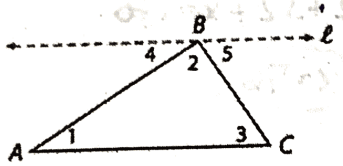
Find the value of n.



Review Sheet

Key

Proofs We Have Discussed and will be on the quiz



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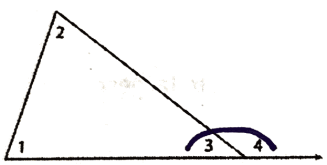

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1. How do you find the sum of the interior angles of a polygon?

formula: $180(n-2)$

n = # of sides

2. How many sides does a polygon with an interior angle sum of 2700° have?

$2700 = 180(n-2)$

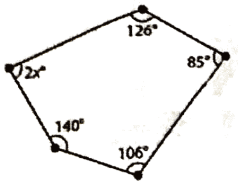
$15 = n-2$

$n = 17$

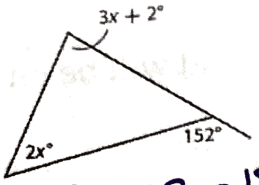
3. What is the measure of an interior angle of a regular pentagon?

$180(3) = 540$ $\quad \frac{540}{5} = 108°$

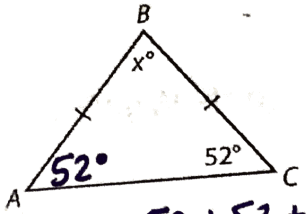
4. Find the value of x in each.



180(5-2)
540
41.5



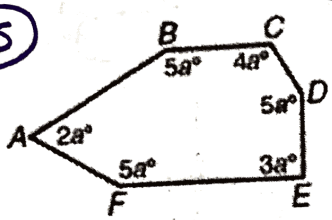
3x+2+2x = 152
5x = 150
x = 30



52+52+x = 180
x = 76

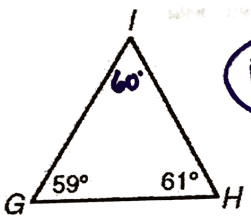
Find the value of a. →

180(4)



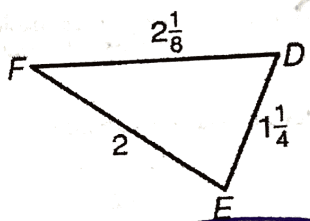
24a = 720
a = 30

5. Name the sides from smallest to largest.



$\overline{HI}, \overline{HG}, \overline{IG}$

6. Name the angles in order from smallest to largest.



∠F, ∠D, ∠E

7. Can three segments with lengths 8, 15, and 6 make a triangle? Explain your answer.

No 8+6 < 15
8+6 ≯ 15

Two sides of a Δ added together must be greater than the 3rd side

8. Can a triangle be made from the side lengths 3, 3, and 6? Explain.

No 3+3 ≮ 6

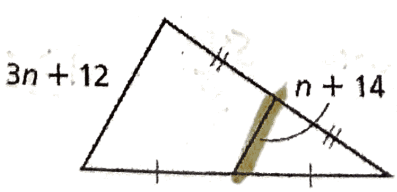
9. A triangle has sides 3 cm and 8 cm. What are the possible side lengths of the third side?

5 < x < 11

10. What is a midsegment of a triangle?

a line segment connecting the midpoints of two sides

Find the value of n.



2(n+14) = 3n+12
2n+28 = 3n+12
16 = n