CHAPTER 7.1-7.4

FACE OFF!

A CHALLENGE VS. YOUR PARTNER AND YOURSELF!!!

YOU CAN BET...

$100 $200 $300   Per question

If you get the question correct, you win as much as you bet.

If you get the question incorrect, you lose as much as you bet.

YOU READY??/?!

GAME ON...

QUESTION 1:

Sometimes, Always, Never

The number of diagonals in a polygon is equal to the number of vertices the polygon has.

ANSWER 1:

Sometimes, ~~Always, Never~~

The number of diagonals in a polygon is equal to the number of vertices the polygon has.   when it's a pentagon ☺

# of diag = $\frac{5(5-3)}{2}$

$= \boxed{5}$
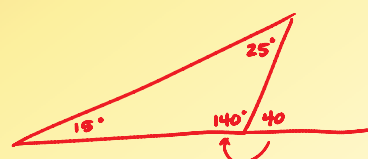

QUESTION 2:

The exterior angle of a triangle is larger than any interior angle.

ANSWER 2:

~~Sometimes,~~ Always, Never

Consider:

25°

15°   140° 40

only ALWAYS larger than remote interior

QUESTION 3:

- Find the sum of the measures of the angles of a decagon

ANSWER #3:

- Find the sum of the measures of the angles of a decagon

$$S_i = 180(n-2)$$
$$= 180(10-2)$$
$$= 180(8)$$
$$= \boxed{1440}$$

QUESTION 4:

- What is the name of the polygon that has 104 diagonals?

ANSWER #4:

- What is the name of the polygon that has 104 diagonals?

$$\text{\# of diag} = \frac{n(n-3)}{2}$$
$$104 = \frac{n(n-3)}{2}$$
$$208 = n^2 - 3n$$
$$0 = n^2 - 3n - 208$$
$$-16 \quad 13$$
$$0 = (n-16)(n+13)$$
$$n = 16, -13$$

QUESTION #5:

- How many sides does a polygon have if the sum of the measures of its angles is 1620?

ANSWER #5:

- How many sides does a polygon have if the sum of the measures of its angles is 1620?

$$S_i = 180(n-2)$$
$$1620 = 180(n-2)$$
$$9 = n-2$$
$$11 = n$$

$$\boxed{11 \text{ sides}}$$

QUESTION #6:

○ What is the measure of the exterior angle of a regular nonogon

ANSWER #6:

○ What is the measure of the exterior angle of a regular nonogon

$$E = \frac{360}{9}$$

$$\boxed{E = 40}$$

QUESTION #7:

○ A regular polygon has an exterior angle of 18 degrees. What is the name of the polygon?

ANSWER #7:

○ A regular polygon has an exterior angle of 18 degrees. What is the name of the polygon?

A 20-GON

QUESTION #8:

○ A regular polygon has an interior angle of 165 degrees. What is the name of the polygon?

ANSWER #8:

○ A regular polygon has an interior angle of 165 degrees. What is the name of the polygon?

int: 165
ext: 15

$$E = \frac{360}{n}$$

$$15 = \frac{360}{n}$$

$$15n = 360$$

$$n = 24$$

QUESTION #9:

○ How many sides does a heptagon have? How many diagonals does it have?

ANSWER #9:

○ **7** sides
○ **14** diagonals

# of diag = $\frac{7(7-3)}{2}$
= $\boxed{14}$

QUESTION #10:

○ Part of the formula for the number of diagonals of a polygon is (n-3). What does this quantity represent?

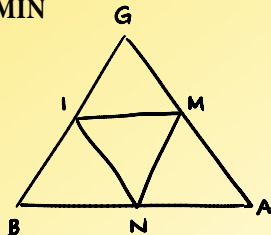## ANSWER #10:

○ Part of the formula for the number of diagonals of a polygon is (n-3). What does this quantity represent?

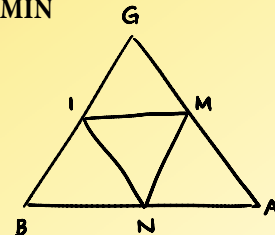# of vertices → $\frac{n(n-3)}{2}$ ← # of diagonals from a single vertex

"repeats"

QUESTION #11:

Given that I, M, N are midpoints and the perimeter of triangle BAG is 148. Find the perimeter of MIN

ANSWER #11:

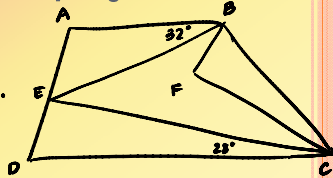Given that I, M, N are midpoints and the perimeter of triangle BAG is 148. Find the perimeter of MIN

$P_{MIN} = \boxed{74}$

QUESTION #12:

Given: $\overline{BF}$ bis. $\angle EBC$
$\overline{CF}$ bis. $\angle BCE$
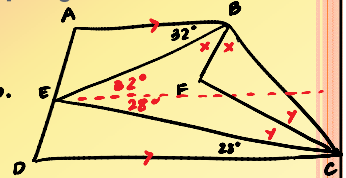ABCD is a trap.

Find: $\angle BEC$, $\angle BFC$

ANSWER #12:

Given: $\overline{BF}$ bis. $\angle EBC$
$\overline{CF}$ bis. $\angle BCE$
ABCD is a trap.

Find: $\angle BEC$, $\angle BFC$
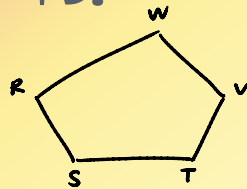$\boxed{60°}$ $\boxed{120°}$

$2x + 2y + 60 = 180$
$2x + 2y = 120$
$x + y = 60$

QUESTION #13:

Given: $\angle S \cong \angle T$
$\angle W = 40°16'$
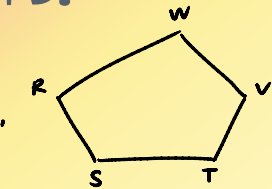$\angle R = 120°14'$
$\angle V = 129°40'$

Find $\angle S$

ANSWER #13:

Given: $\angle S \cong \angle T$
$\angle W = 40°16'$
$\angle R = 120°14'$
$\angle V = 129°40'$

Find $\angle S$

$40°16'$
$120°14'$
$129°40'$
$289°70' \Rightarrow 290°10'$

$S_i = 180(n-2)$
$= 180(5-2)$
$= 540$

$539°60'$
$-290°10'$
$249°50' \div 2$

$124.5°25'$
$\boxed{124°55'}$