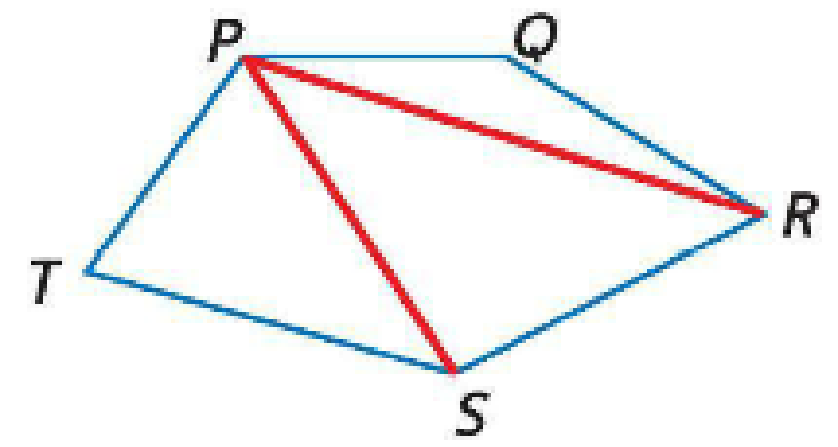
PROPERTIES OF POLYGONS

DIAGONAL

A DIAGONAL OF A POLYGON IS A SEGMENT THAT CONNECTS ANY TWO *NONCONSECUTIVE* VERTICES.



POLYGON INTERIOR ANGLES SUM

- THE SUM OF THE ANGLE MEASURES OF A POLYGON IS THE SUM OF THE ANGLE MEASURES OF THE TRIANGLES FORMED BY DRAWING ALL THE POSSIBLE DIAGONALS FROM ONE VERTEX.
- THE SUM OF THE INTERIOR ANGLE MEASURES OF AN *N*-SIDED CONVEX POLYGON IS (N-2)*180

EXAMPLES

- FIND THE SUM OF THE MEASURES OF THE INTERIOR ANGLES OF A CONVEX OCTAGON.

EXAMPLES

- FIND THE SUM OF THE MEASURES OF THE INTERIOR ANGLES OF A CONVEX OCTAGON.

- OCTAGON = 8 SIDES
- (8 - 2) * 180 = 6 * 180 = 1080

EXAMPLES

- FIND THE SUM OF THE MEASURES OF THE INTERIOR ANGLES OF A CONVEX 32-GON.

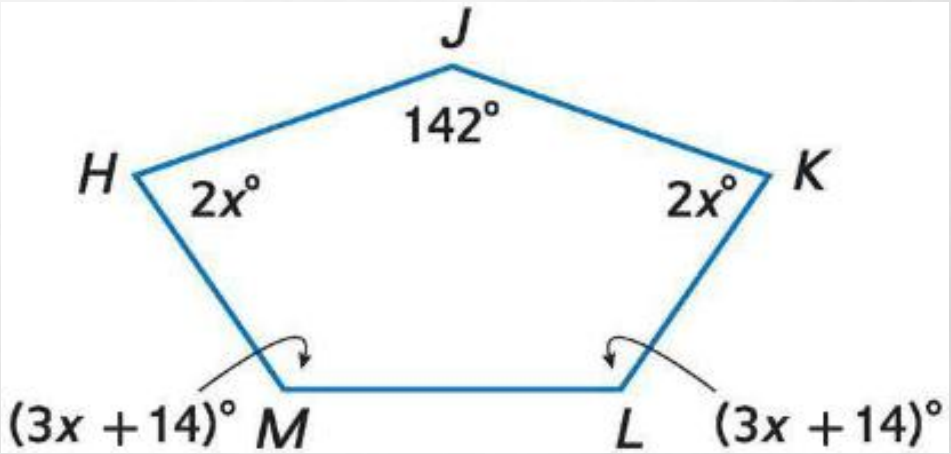
EXAMPLES

- FIND THE SUM OF THE MEASURES OF THE INTERIOR ANGLES OF A CONVEX 32-GON.

- 32 SIDES
- (32 - 2) * 180 = 30 * 180 = 5400

EXAMPLES

- **FIND THE MEASURE OF EACH INTERIOR ANGLE OF PENTAGON *HJKLM*.**



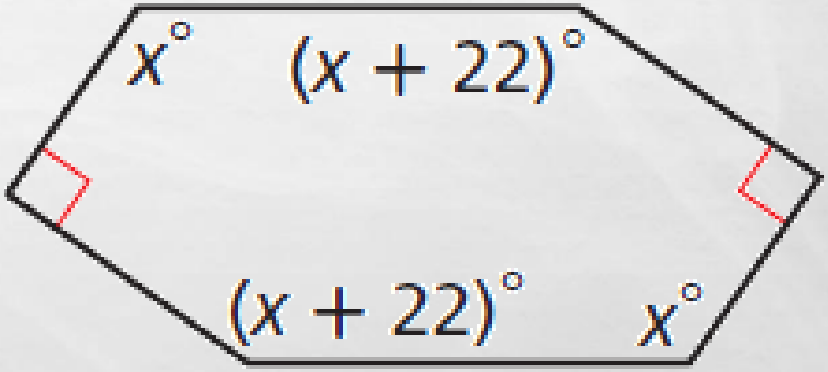
EXAMPLES

- FIND THE MEASURE OF EACH INTERIOR ANGLE OF PENTAGON *HJKLM*.

- (5 - 2) * 180 = 3 * 180 = 540
- 2X + 2X + (3X + 14) + (3X + 14) + 142 = 540
- 10X + 28 + 142 = 540
- 10X = 370
- X = 37
- 74, 74 , 125, 125, 142

EXAMPLES

- FIND THE MEASURE OF EACH INTERIOR ANGLE OF PENTAGON *HJKLM*.



EXAMPLES

- FIND THE MEASURE OF EACH INTERIOR ANGLE OF PENTAGON *HJKLM*.

- (6 - 2) * 180 = 4 * 180 = 720
- X + X + (X + 22) + (X + 22) + 90 + 90 = 720
- 4X + 224 = 720
- 4X = 496
- X = 124
- 124, 124 , 146, 146, 90, 90

EXAMPLES

- THE MEASURE OF AN INTERIOR ANGLE OF A REGULAR POLYGON IS 135. FIND THE NUMBER OF SIDES IN THE POLYGON.

EXAMPLES

- THE MEASURE OF AN INTERIOR ANGLE OF A REGULAR POLYGON IS 135. FIND THE NUMBER OF SIDES IN THE POLYGON.

- $135N = (N - 2) * 180$
- $135N = 180N - 360$
- $360 = 45N$
- $N = 8$

EXAMPLES

- THE MEASURE OF AN INTERIOR ANGLE OF A REGULAR POLYGON IS 108. FIND THE NUMBER OF SIDES IN THE POLYGON.

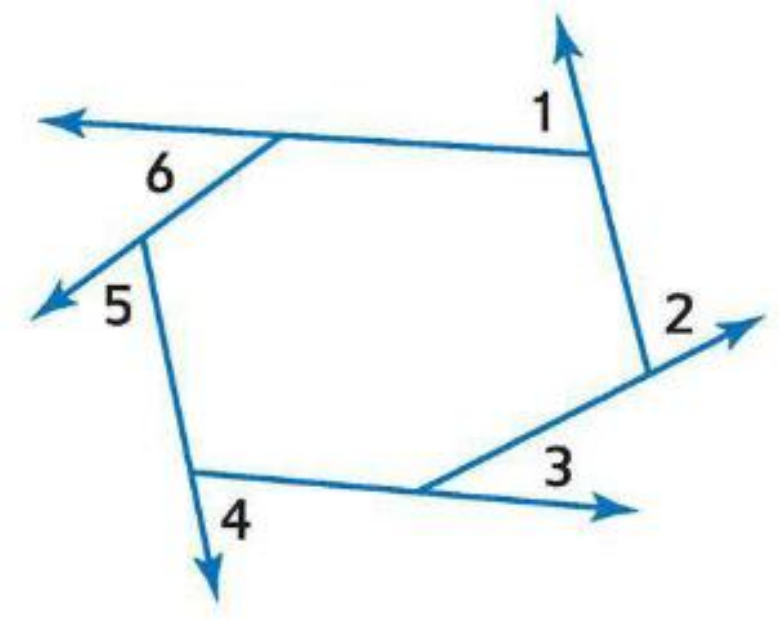
EXAMPLES

- THE MEASURE OF AN INTERIOR ANGLE OF A REGULAR POLYGON IS 108. FIND THE NUMBER OF SIDES IN THE POLYGON.

- $108N = (N - 2) * 180$
- $108N = 180N - 360$
- $360 = 72N$
- $N = 5$

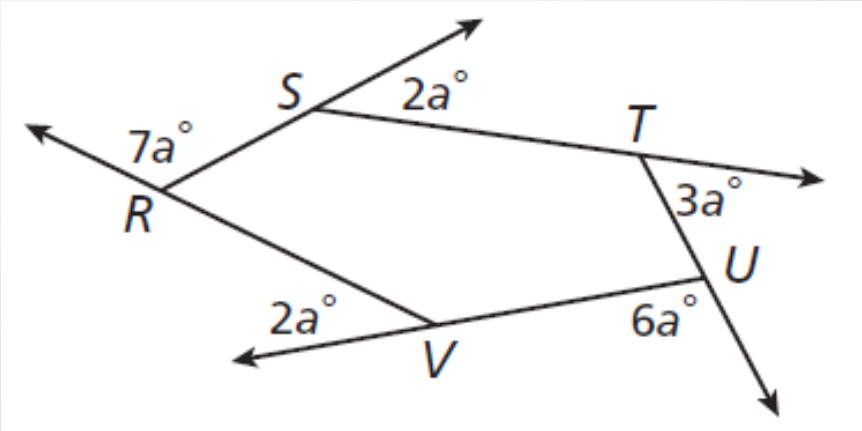
POLYGON EXTERIOR ANGLE SUM

- THE SUM OF THE EXTERIOR ANGLE MEASURES OF A CONVEX POLYGON IS 360.



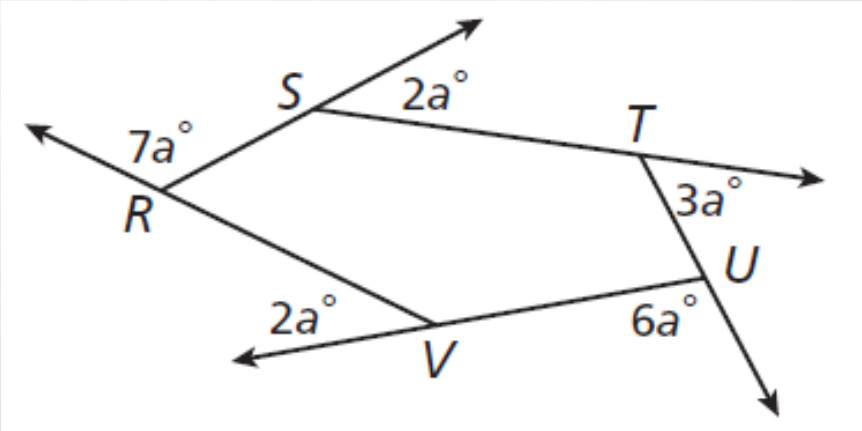
EXAMPLES

- **FIND THE VALUE OF *A* IN POLYGON *RSTUV*.**



EXAMPLES

- **FIND THE VALUE OF *A* IN POLYGON *RSTUV*.**



- **7A + 2A + 3A + 6A + 2A = 360**
- **20A = 360**
- **A = 18**

EXAMPLES

- A PENTAGON HAS EXTERIOR ANGLE MEASURES OF $5x^\circ$, $4x^\circ$, $10x^\circ$, $3x^\circ$, AND $8x^\circ$. FIND THE VALUE OF x.

EXAMPLES

- A PENTAGON HAS EXTERIOR ANGLE MEASURES OF $5A^\circ$, $4A^\circ$, $10A^\circ$, $3A^\circ$, AND $8A^\circ$. FIND THE VALUE OF A.

- $5A + 4A + 10A + 3A + 8A = 360$
- $30A = 360$
- $A = 12$