Octagon Tile

This problem gives you the chance to:
• work with patterns and shape

Here is a design for a tile in the shape of a regular octagon.

The design is made from eight squares all the same size placed symmetrically round the octagon.

1. Join eight points in the diagram to make another regular octagon.

2. The inner sides of the squares form a ‘star’ in centre of the tile.

   How many sides does the star have? 16
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? \[ \text{8} \]

What is the angle between each line of symmetry and the next? \[ 22.5 \]^

Explain how you know. \[ 360 \div 16 \text{ is at the center} \]

4.

Angle A is 135°. Calculate the measure of angle B.

Calculate the angle B:
\[ 90 + 90 + 135 = 315 \]^
\[ 360 - 315 = 45 \]^

Show your work. \[ 45 \]
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2. The inner sides of the squares form a ‘star’ in centre of the tile.

   How many sides does the star have? 8 \times 0
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? ____________

What is the angle between each line of symmetry and the next? ____________

Explain how you know. ____________

4.

Angle A is 135°. Calculate the measure of angle B.
Show your work.

There is a diamond with 45 each end.
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2. The inner sides of the squares form a ‘star’ in centre of the tile.

How many sides does the star have? 16 √
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have?

What is the angle between each line of symmetry and the next?

Every other line of symmetry = 90°
Half of 90° = 45°

4.

Angle A is 135°. Calculate the measure of angle B.

Two 90° squares and the 135° from 360°
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2. The inner sides of the squares form a ‘star’ in centre of the tile.
   How many sides does the star have? 16
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? ________ 8 ________ (1)

What is the angle between each line of symmetry and the next? Explain how you know.

there are 8 turns and take

$$340 \div 8 = 45^\circ$$

4. Angle A is 135\(^\circ\). Calculate the measure of angle B. Show your work.

$$380 \ - \ (135 \ + \ 90 \ + \ 90)$$

$$80^\circ$$
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2. The inner sides of the squares form a ‘star’ in centre of the tile.
   How many sides does the star have? 16
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have?  

What is the angle between each line of symmetry and the next?  

Explain how you know.  

I saw below that 1 point is 45° so I go by 2

4.  

Angle A is 135°. Calculate the measure of angle B.  

Show your work.  

360 - 40 - 40 - 135  

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2. The inner sides of the squares form a ‘star’ in centre of the tile.
   How many sides does the star have? 16
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have?

What is the angle between each line of symmetry and the next?

Explain how you know.

360° ÷ 8

4. Angle A is 135°. Calculate the measure of angle B.

Show your work.

\[ 135 + 90 + 90 = 315 \]

\[ 360 - 315 = 45 \]
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2. The inner sides of the squares form a ‘star’ in centre of the tile.

   How many sides does the star have? 14
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 8

What is the angle between each line of symmetry and the next? 45°

Explain how you know. 360° ÷ 8 = 45°

4. Angle A is 135°. Calculate the measure of angle B.

Show your work. 135° ÷ 2 = 67.5°
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2. The inner sides of the squares form a ‘star’ in centre of the tile.

   How many sides does the star have? 16

   ✓
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 4 ✓

What is the angle between each line of symmetry and the next? \(45^\circ\)

Explain how you know.

\[\frac{360^\circ}{8}\]

4.

Angle A is \(135^\circ\). Calculate the measure of angle B. Show your work.

\[90^\circ - 2\angle B\]
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2. The inner sides of the squares form a ‘star’ in centre of the tile.

How many sides does the star have? 16
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 8 ✔️

What is the angle between each line of symmetry and the next? acute ✗

Explain how you know.
the angles are smaller than 90° ✗

4.

Angle A is 135°. Calculate the measure of angle B.
Show your work.
the angle is a bit bigger but still less than 90° ✗

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1. Join eight points in the diagram to make another regular octagon.

2. The inner sides of the squares form a ‘star’ in centre of the tile.

   How many sides does the star have?  \( \underline{16} \) \( \checkmark \)
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 4

What is the angle between each line of symmetry and the next? 45°

Because a circle is 360° so just divide 360° by 8.

4.

Angle A is 135°. Calculate the measure of angle B.

Show your work.

360 - 325 = 35°
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2. The inner sides of the squares form a ‘star’ in centre of the tile.
   How many sides does the star have? 16  
   
   [Diagram showing 16 sides]
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? __4__

What is the angle between each line of symmetry and the next? __45°__

Because the angle of the __1st__ and __4th__ line of symmetry is __90°__

4. Angle A is 135°. Calculate the measure of angle B.

Show your work. __30°__

It is less than __90°__
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2. The inner sides of the squares form a ‘star’ in centre of the tile.
   How many sides does the star have?  16
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 16 ×

What is the angle between each line of symmetry and the next? 20° ×

Explain how you know. \[ \frac{320}{16} = 20° \times \]

× Full Circle # of lines 2 ft

4.

Angle A is 135°. Calculate the measure of angle B. Show your work.

\[ 320 - (135 + 90 + 90) = 320 - 315 \]

10°
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2. The inner sides of the squares form a ‘star’ in centre of the tile.

   How many sides does the star have? 16

   ✓
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 8 \checkmark

What is the angle between each line of symmetry and the next? 45° \checkmark

Explain how you know. Because I divided 360° by 8 \checkmark (1) ft

because all of the angles should equal up to 360°

4.

Angle A is 135°. Calculate the measure of angle B. Show your work.

2 \cdot 90 + 135 = 315 360° – \checkmark

\checkmark
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1. Join eight points in the diagram to make another regular octagon.

2. The inner sides of the squares form a ‘star’ in centre of the tile.

How many sides does the star have? 16 sides
3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? _______8______  
What is the angle between each line of symmetry and the next? _______30° X______  
Explain how you know. because every triangle is 90° + 90° ÷ 3 = 30°. _______0______

4. Angle A is 135°. Calculate the measure of angle B. Show your work. _______40° X______
I measured it _______0______
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1. Join eight points in the diagram to make another regular octagon.

2. The inner sides of the squares form a ‘star’ in centre of the tile.
   How many sides does the star have? 16

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3. Draw in all the lines of symmetry of the star.

How many lines of symmetry does the star have? 8 ✓

What is the angle between each line of symmetry and the next? 22.5° ✓

Explain how you know. \[ \frac{360°}{16 \text{ (lines from center)}} = 22.5° \]

4. Angle A is 135°. Calculate the measure of angle B. Show your work.

\[ 135° + 90° + 90° = 315° - \]

\[ \frac{360°}{45°} \]

\[ 45° ✓ \]