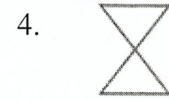
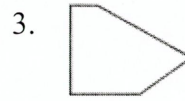
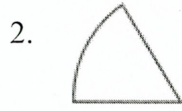


Tell whether the figure is a polygon. **If it is not, explain why.** If it is a polygon, tell whether it is convex or concave.



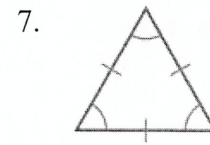
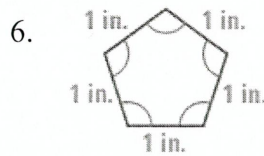
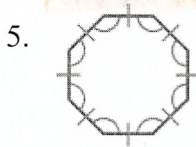
Polygon; Concave

No; why?

Polygon; Convex

No; why?

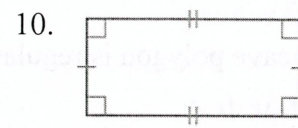
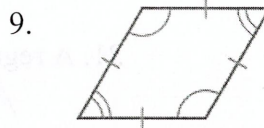
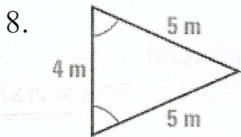
Classify the polygon by the number of sides. Tell whether the polygon is equilateral, equiangular, or regular. **Explain your reasoning.**



Octagon; Regular

Pentagon; Regular

Triangle; Regular

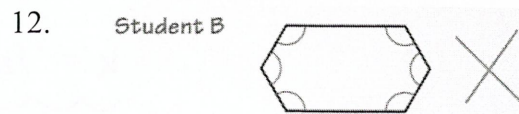
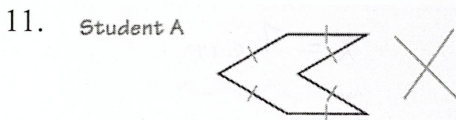


Triangle; None

Quadrilateral; Equilateral

Quadrilateral; Equiangular

Two students were asked to draw a **regular** hexagon, as shown below. **Describe the error made by each student.**



13. The expressions  $(9x + 5)^\circ$  and  $(11x - 25)^\circ$  represent the measures of two angles of a regular nonagon. Find the measure of an angle of the nongon. **Show your work!**

$m\angle 140^\circ$

14. The length (in inches) of two sides of a regular pentagon are represented by the expressions  $5x - 27$  and  $2x - 6$ . Find the length of a side of the pentagon. **Show your work!**

$$\underline{s = 8 \text{ in}}$$

15. Imagine that you can tie a string tightly around a polygon. If the polygon is convex, will the length of the string be equal to the distance around the polygon? What if the polygon is concave. **Explain or draw an example**

Convex  $\rightarrow$  Yes

Concave  $\rightarrow$  No

Tell whether the statement is always, sometimes or never true.

16. A triangle is convex

Always

18. A regular polygon is equiangular

Always

20. A concave polygon is regular.

Never

17. A decagon is regular

Sometimes

19. A circle is a polygon

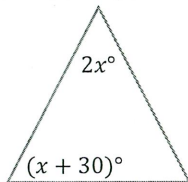
Never

21. A regular polygon is equilateral

Always

Each figure is a regular polygon. Find the value of  $x$ . **Show work!**

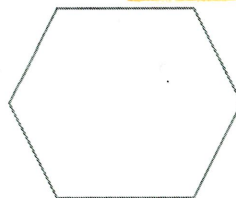
22.



$$\underline{x = 30^\circ}$$

23.

$(3x + 32)$  ft

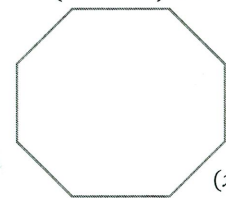


$(13x + 27)$  ft

$$\underline{x = 1/2 \text{ ft}}$$

24.

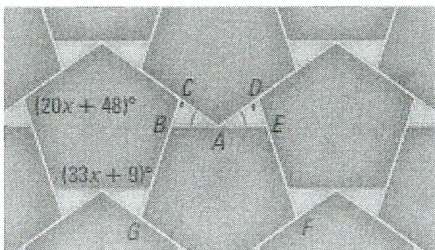
$(2x^2 - 61)$  cm



$(x^2 - 12)$  cm

$$\underline{x = 7 \text{ cm}}$$

25. Regular pentagonal tiles and triangular tiles are arranged in the the pattern shown. The pentagonal tiles are all the same size and shape and the triangular tiles are all the same size and shape. Find the angle measures of the triangular tiles.



$$m\angle CAB \text{ and } m\angle DAE = 36^\circ$$

$$m\angle ACB \text{ and } m\angle ADE = 72^\circ$$

$$m\angle CBA \text{ and } m\angle DEX = 72^\circ$$