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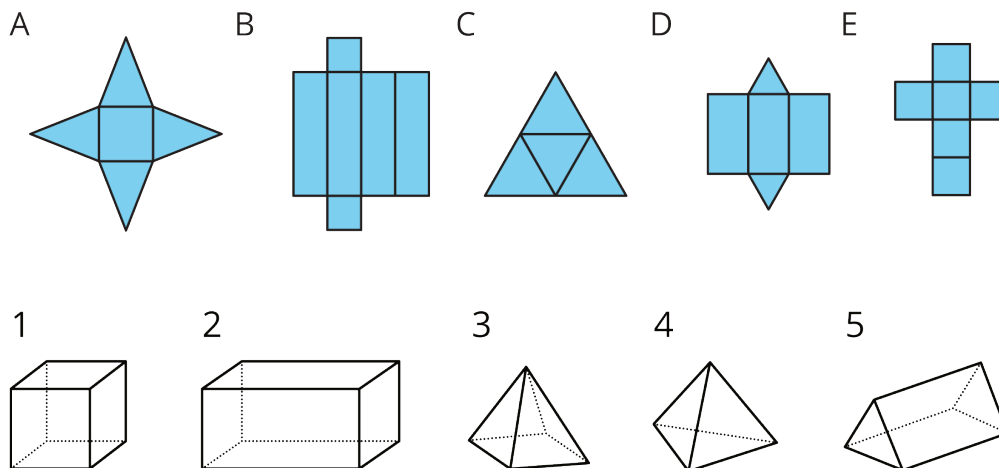
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Unit 1, Lesson 14: Nets and Surface Area

Let's use nets to find the surface area of polyhedra.

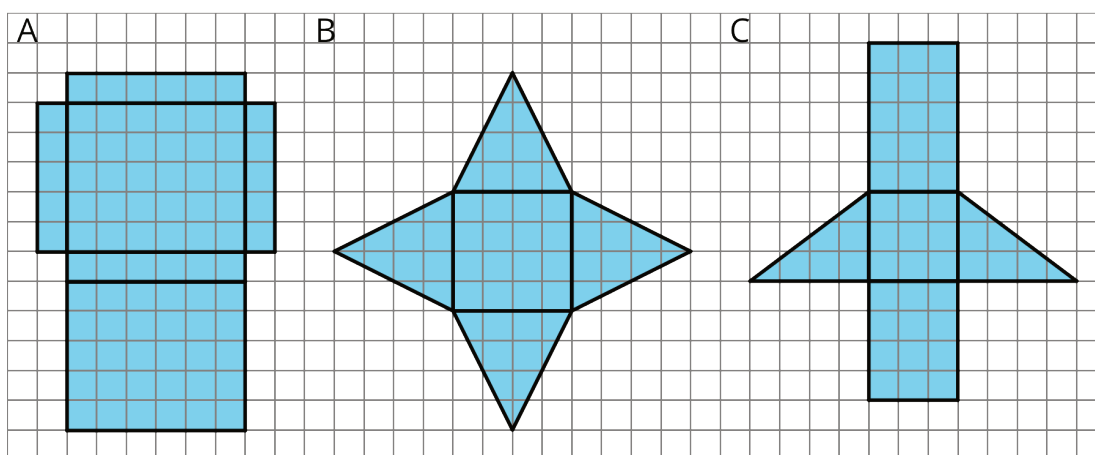
14.1: Matching Nets

Each of the following nets can be assembled into a polyhedron. Match each net with its corresponding polyhedron, and name the polyhedron. Be prepared to explain how you know the net and polyhedron go together.



14.2: Using Nets to Find Surface Area

Your teacher will give you the nets of three polyhedra to cut out and assemble.



1. Name the polyhedron that each net would form when assembled.

A:

B:

C:

2. Cut out your nets and use them to create three-dimensional shapes.

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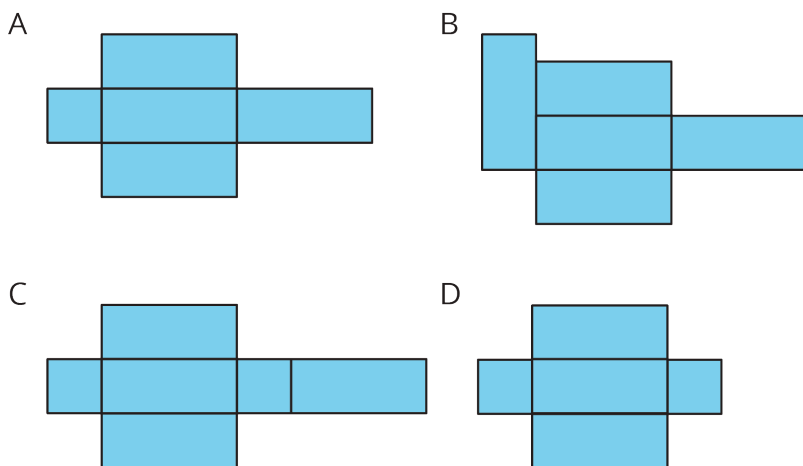
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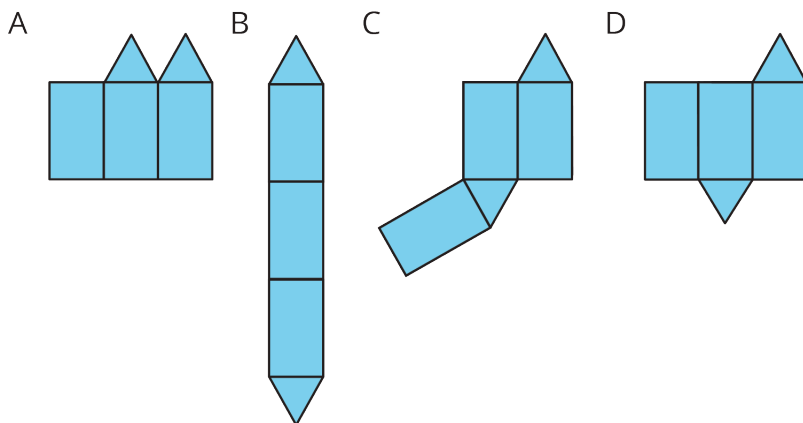
3. Find the **surface area** of each polyhedron. Explain your reasoning clearly.

Are you ready for more?

1. For each of these nets, decide if it can be assembled into a rectangular prism.



2. For each of these nets, decide if it can be folded into a triangular prism.



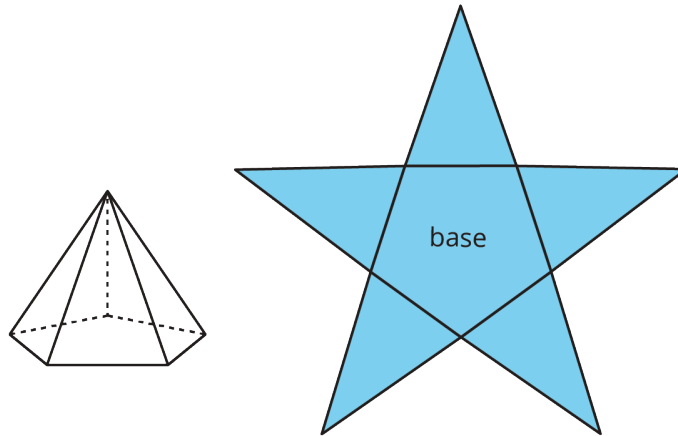
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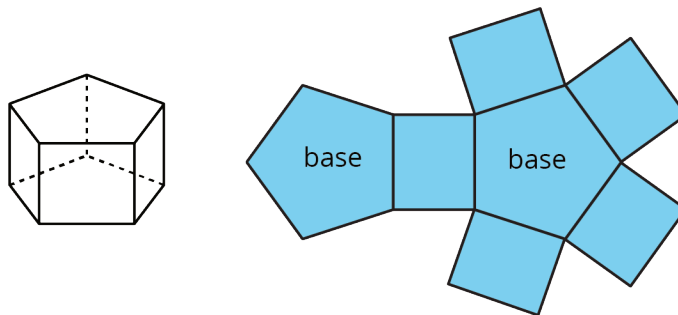
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Lesson 14 Summary

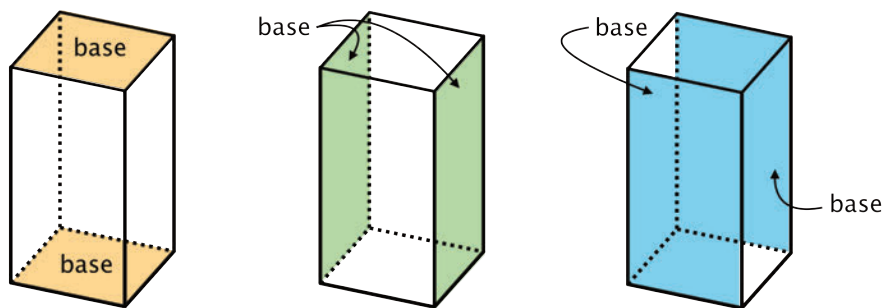
A net of a *pyramid* has one polygon that is the base. The rest of the polygons are triangles. A pentagonal pyramid and its net are shown here.



A net of a *prism* has two copies of the polygon that is the base. The rest of the polygons are rectangles. A pentagonal prism and its net are shown here.



In a rectangular prism, there are three pairs of parallel and identical rectangles. Any pair of these identical rectangles can be the bases.



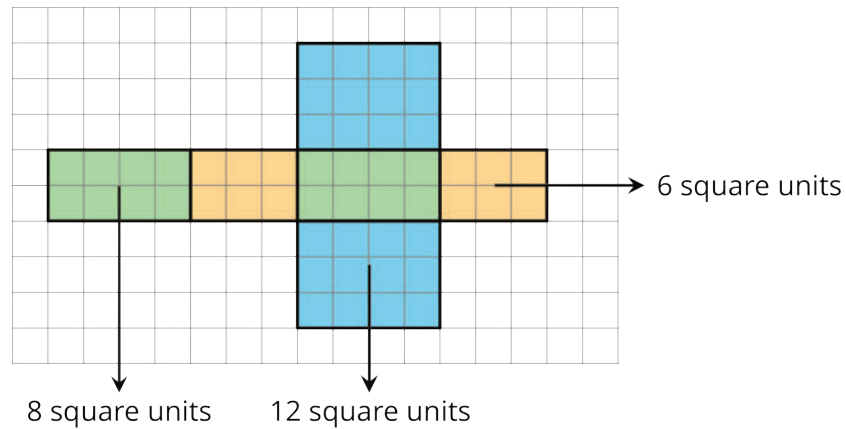
Because a net shows all the faces of a polyhedron, we can use it to find its surface area.

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For instance, the net of a rectangular prism shows three pairs of rectangles: 4 units by 2 units, 3 units by 2 units, and 4 units by 3 units.



The **surface area** of the rectangular prism is 52 square units because $8 + 8 + 6 + 6 + 12 + 12 = 52$.

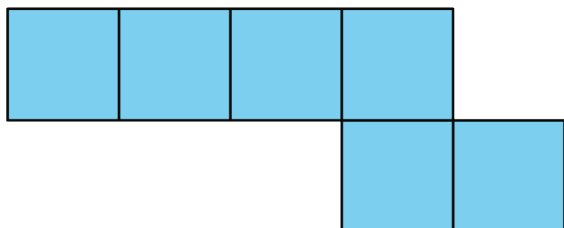
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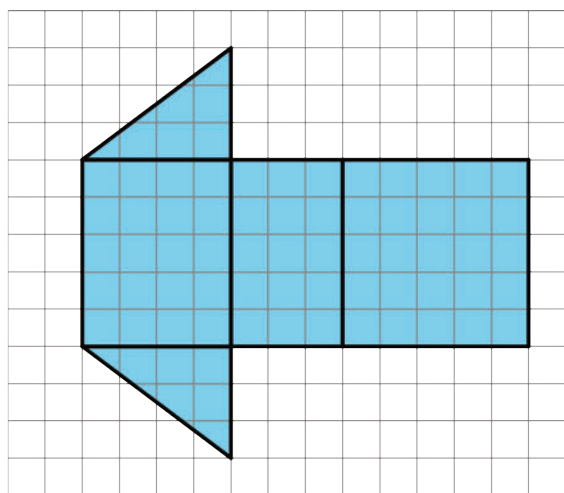
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Unit 1, Lesson 14: Nets and Surface Area

1. Can the following net be assembled into a cube? Explain how you know. Label parts of the net with letters or numbers if it helps your explanation.



2. a. What polyhedron can be assembled from this net? Explain how you know.



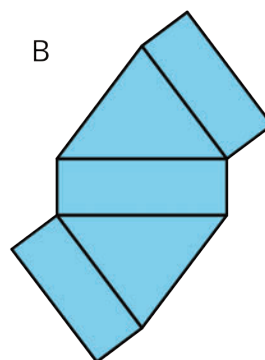
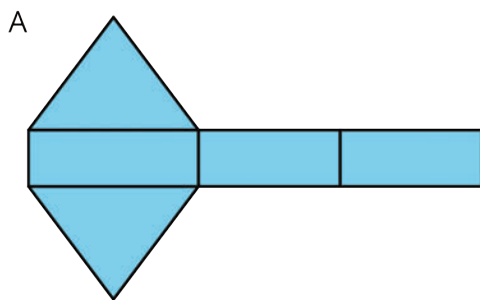
- b. Find the surface area of this polyhedron. Show your reasoning.

3. Here are two nets. Mai said that both nets can be assembled into the same triangular prism. Do you agree? Explain or show your reasoning.

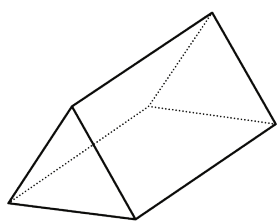
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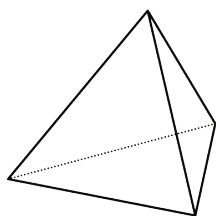
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4. Here are two three-dimensional figures.



A



B

Tell whether each of the following statements describes Figure A, Figure B, both, or neither.

- a. This figure is a polyhedron.
- b. This figure has triangular faces.
- c. There are more vertices than edges in this figure.
- d. This figure has rectangular faces.
- e. This figure is a pyramid.
- f. There is exactly one face that can be the base for this figure.
- g. The base of this figure is a triangle.
- h. This figure has two identical and parallel faces that can be the base.

(from Unit 1, Lesson 13)

5. Select **all** units that can be used for surface area. Explain why the others cannot be used for surface area.

- A. square meters
- B. feet
- C. centimeters
- D. cubic inches

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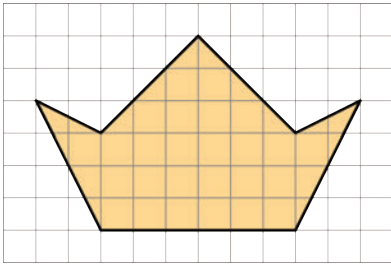
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E. square inches

F. square feet

(from Unit 1, Lesson 12)

6. Find the area of this polygon. Show your reasoning.



(from Unit 1, Lesson 11)