

Grade 6 - Nets and Surface Area - Answer Key

Common Core 6.G.A.4 · maths-pdf.fr/en/

Check each surface area here. The solutions list every face, show each area, add them, and give the answer in square units in bold. Nets are included for many problems so you can see the faces.

Grade 6 · Common Core State Standards: **6.G.A.4**

Exercise 1 - Name the solid

Six rectangles in matching pairs fold into a box.

A rectangular prism

Exercise 2 - Surface area from a net

Faces: two $5 \cdot 3 = 15$, two $5 \cdot 4 = 20$, two $3 \cdot 4 = 12$.

$$2(15 + 20 + 12) = 2 \cdot 47 = 94$$

$$94 \text{ cm}^2$$

Exercise 3 - Surface area of a cube

A cube has 6 identical square faces. One face: $6 \cdot 6 = 36$.

$$6 \cdot 36 = 216$$

$$216 \text{ in}^2$$

Exercise 4 - Surface area of a prism

$$2(8 \cdot 2 + 8 \cdot 3 + 2 \cdot 3) = 2(16 + 24 + 6) = 2 \cdot 46 = 92$$

$$92 \text{ ft}^2$$

Exercise 5 - Lateral area

Each side face is $4 \cdot 9 = 36$.

$$4 \cdot 36 = 144$$

$$144 \text{ in}^2$$

Exercise 6 - Square pyramid

$$\text{Base: } 6 \cdot 6 = 36. \text{ Each triangle: } \frac{1}{2} \cdot 6 \cdot 5 = 15.$$

$$36 + 4 \cdot 15 = 96$$

$$96 \text{ cm}^2$$

Exercise 7 - Triangular prism

$$\text{Two triangles: } 2 \cdot \frac{1}{2} \cdot 3 \cdot 4 = 12.$$

$$\text{Three rectangles: } 3 \cdot 10 + 4 \cdot 10 + 5 \cdot 10 = 120.$$

$$12 + 120 = 132$$

$$132 \text{ cm}^2$$

Exercise 8 - Find the edge of a cube

$$\text{One face: } 150 \div 6 = 25.$$

$$s^2 = 25, \text{ so } s = 5.$$

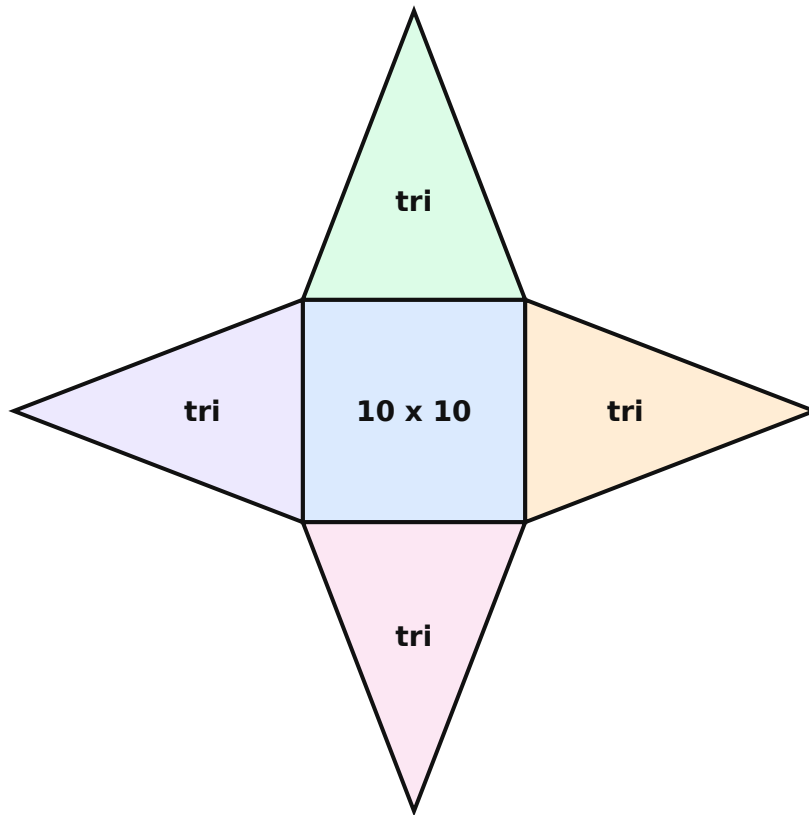
5 inches

Exercise 9 - Large pyramid

$$\text{Base: } 100. \text{ Each triangle: } \frac{1}{2} \cdot 10 \cdot 13 = 65.$$

$$100 + 4 \cdot 65 = 360$$

$$360 \text{ m}^2$$



Four triangles around a square.

Exercise 10 - Wrapping paper

$$2(12 \cdot 8 + 12 \cdot 5 + 8 \cdot 5) = 2(96 + 60 + 40) = 392$$

$$392 \text{ in}^2$$

Exercise 11 - Open-top tank

Bottom: $20 \cdot 10 = 200$. Two long sides: $2 \cdot 20 \cdot 12 = 480$. Two short sides: $2 \cdot 10 \cdot 12 = 240$.

$$200 + 480 + 240 = 920$$

$$920 \text{ in}^2$$

Exercise 12 - Does the net fold?

The center square plus 4 attached squares gives 5 faces. The sixth face is missing.

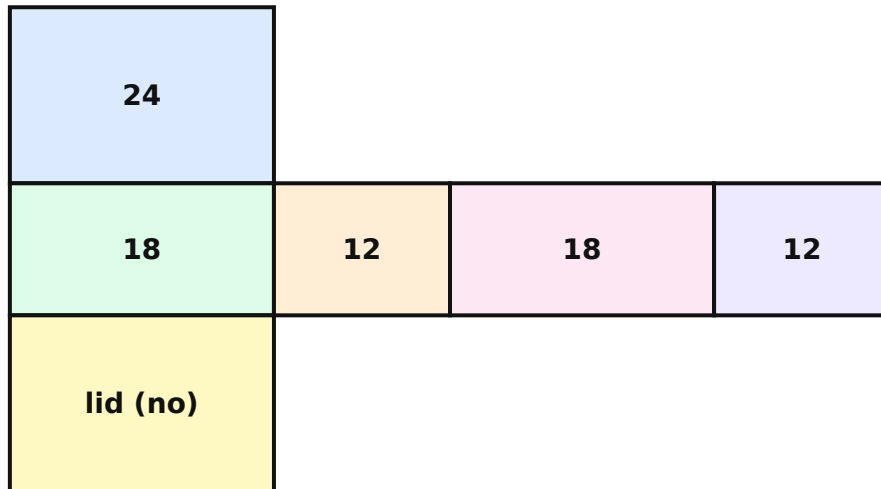
5 squares: it makes an open box (a cube with no top), not a closed cube.

Exercise 13 - Missing face

Full box: $2(24+18+12)=108$. Lid: $6 \cdot 4 = 24$.

$$108 - 24 = 84$$

$$84 \text{ in}^2$$



The five faces total 84.

Exercise 14 - Tent

Triangles: $2 \cdot \frac{1}{2} \cdot 6 \cdot 8 = 48$.

Rectangles: $(6+8+10) \cdot 12 = 288$.

$$48 + 288 = 336$$

$$336 \text{ ft}^2$$

Exercise 15 - Cereal box

$$2(7.5 \cdot 2 + 7.5 \cdot 10 + 2 \cdot 10) = 2(15 + 75 + 20) = 2 \cdot 110 = 220$$

$$220 \text{ in}^2$$

Exercise 16 - Pyramid tent

Base: 64. Each triangle: $\frac{1}{2} \cdot 8 \cdot 7 = 28$.

$$64 + 4 \cdot 28 = 176$$

$$176 \text{ ft}^2$$

Exercise 17 - Cube or prism?

Cube: $6 \cdot 25 = 150$.

Prism: $2(20+24+30) = 148$.

The cube has the greater surface area (150 vs 148 square centimeters).

Exercise 18 - Decimal edges

$$2(2.5 \cdot 4 + 2.5 \cdot 6 + 4 \cdot 6) = 2(10 + 15 + 24) = 98$$

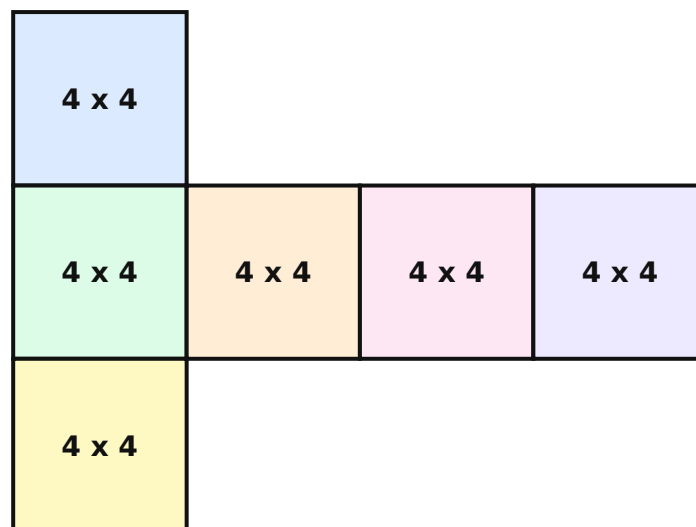
$$98 \text{ m}^2$$

Exercise 19 - Painting a cube

$$6 \cdot 4 \cdot 4 = 96 \text{ square feet.}$$

$$96 \div 40 = 2.4, \text{ so she needs 3 quarts.}$$

$$96 \text{ ft}^2; \text{ 3 quarts}$$



Six faces of 16 square feet.

Exercise 20 - Isosceles triangular prism

Triangles: $2 \cdot \frac{1}{2} \cdot 6 \cdot 4 = 24$.

Rectangles: $(5+5+6) \cdot 9 = 144$.

$$24 + 144 = 168$$

$$168 \text{ in}^2$$