Name: _____ Date: _____

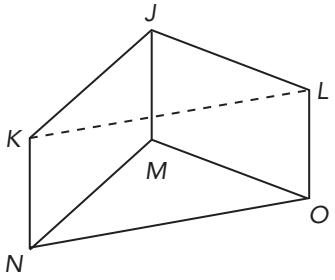
CHAPTER

Surface Area and Volume of Solids

Lesson 12.1 Nets of Solids

Name each prism. In each prism, identify a base, a face, an edge, and a vertex.

1.



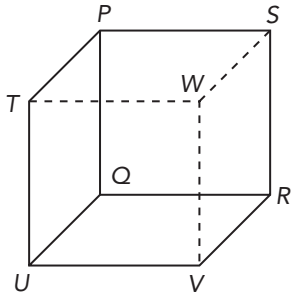
Base = _____

Face = _____

Edge = _____

Vertex = _____

2.



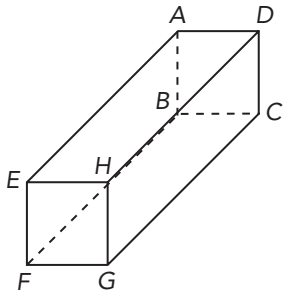
Base = _____

Face = _____

Edge = _____

Vertex = _____

3.



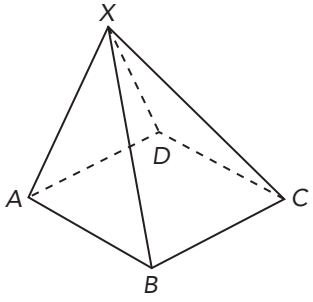
Base = _____

Face = _____

Edge = _____

Vertex = _____

4.



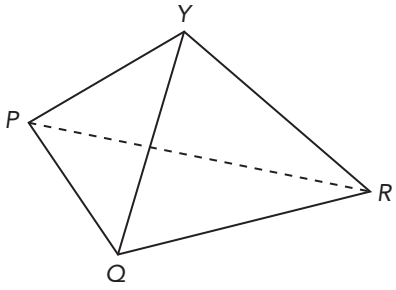
Base = _____

Face = _____

Edge = _____

Vertex = _____

5.



Base = _____

Face = _____

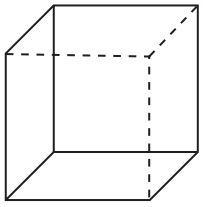
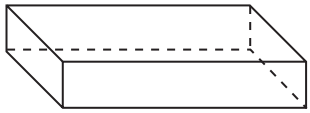
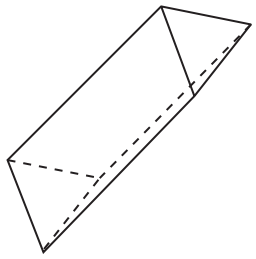
Edge = _____

Vertex = _____

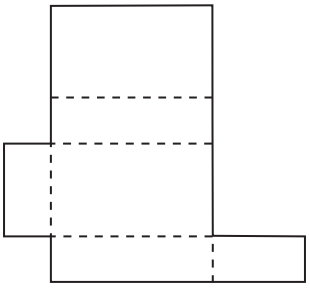
Name: _____ Date: _____

Match each solid with its net(s). There may be more than one net of each solid.

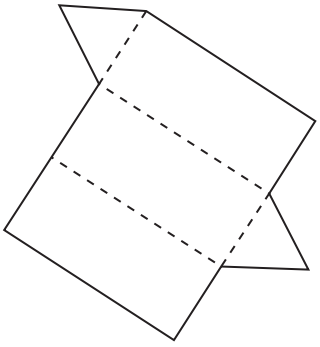
Example

Solid			
Net	*c, d*	*a, e*	*b, f*

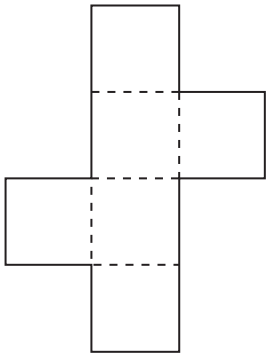
a)



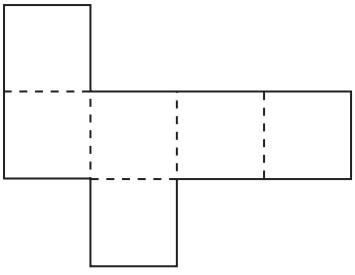
b)



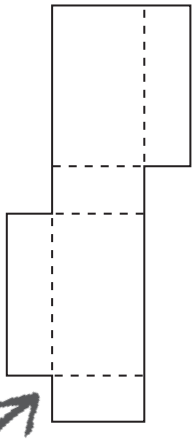
c)



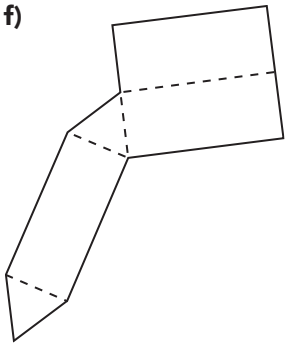
d)



e)



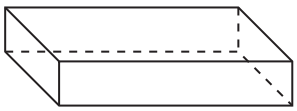
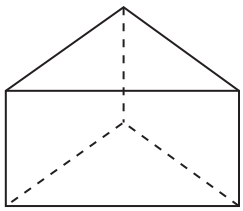
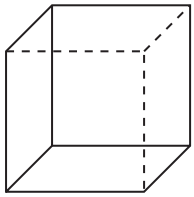
f)



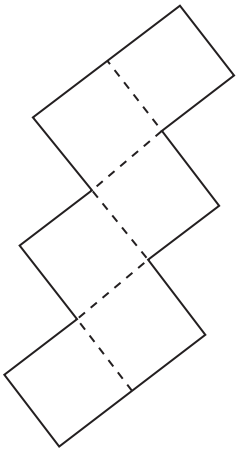
A **net** is a plane figure that can be folded to make a solid. This is a net.

Name: _____ Date: _____

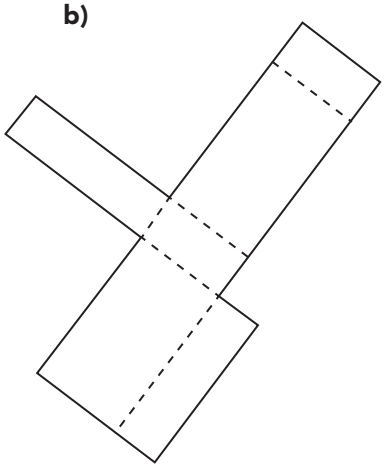
6.

Solid			
Net			

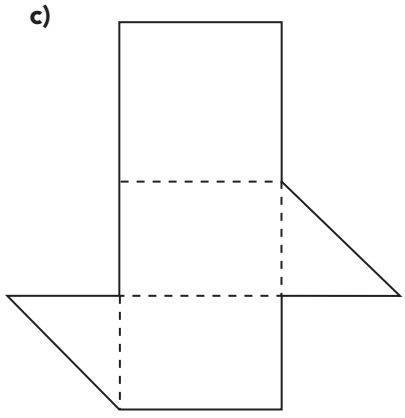
a)



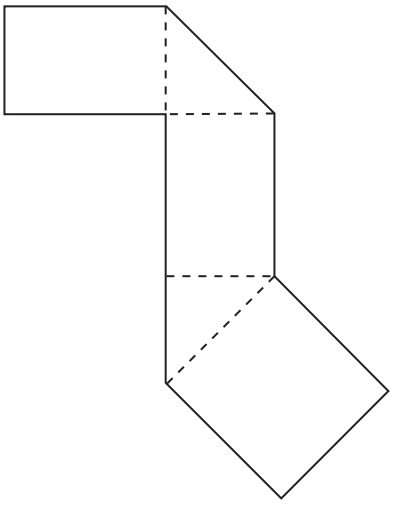
b)



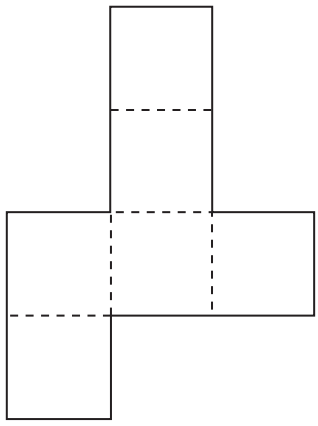
c)



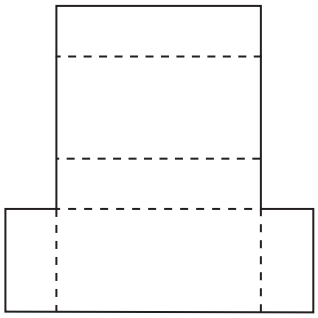
d)



e)



f)

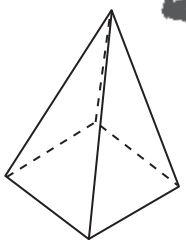
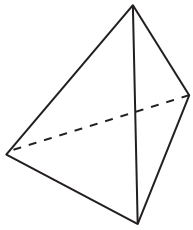


Name: _____ Date: _____

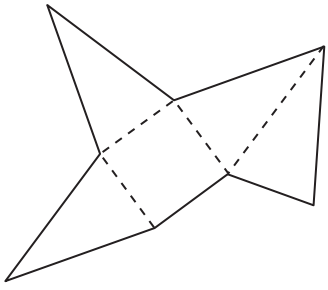
Match each solid with its net(s). There may be more than one net of each solid.

Example

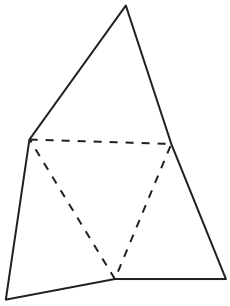
A **pyramid** is a solid whose base is a polygon and whose other faces are triangles that share a common vertex. This pyramid has a square base. It is a square pyramid.

Solid		
Net	*a, c, e,* f	*b, d*

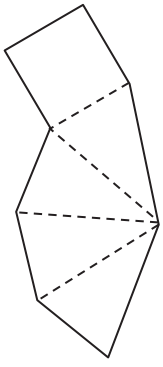
a)



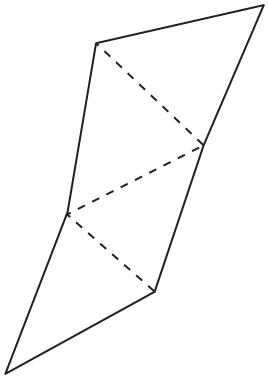
b)



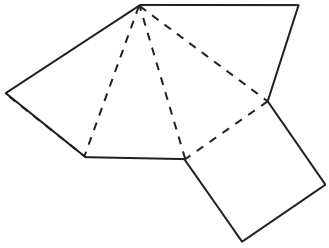
c)



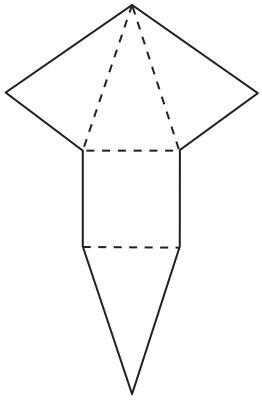
d)



e)

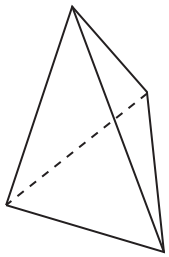
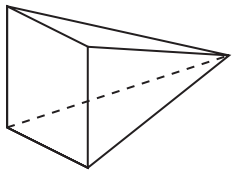


f)

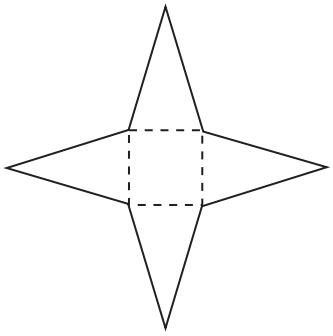


Name: _____ Date: _____

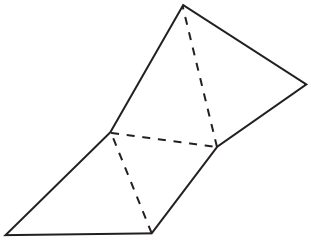
7.

Solid		
Net		

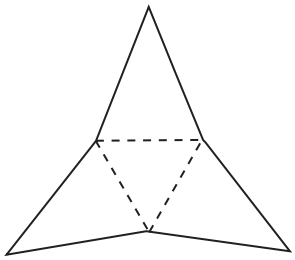
a)



b)



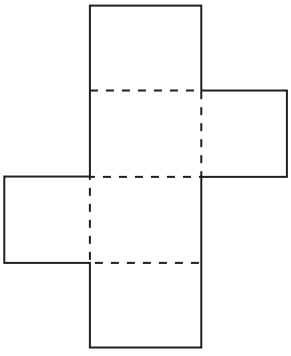
c)



Name the solid that each net forms.

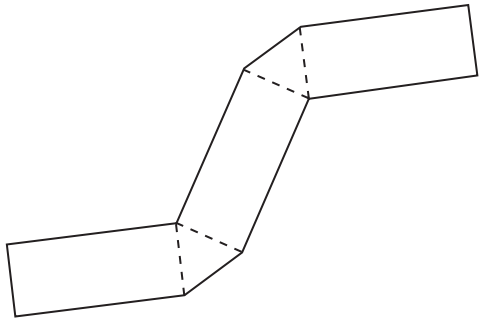
Example

a)



rectangular prism

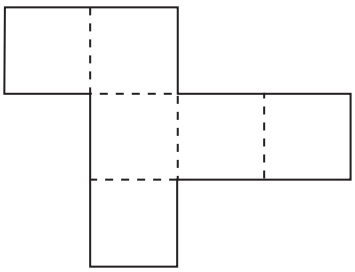
b)



triangular prism

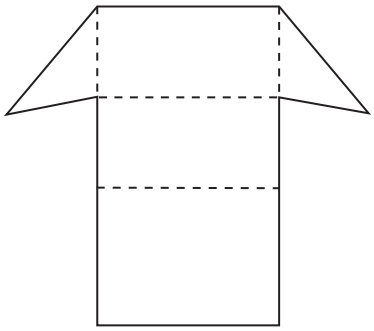
Name: _____ Date: _____

8.



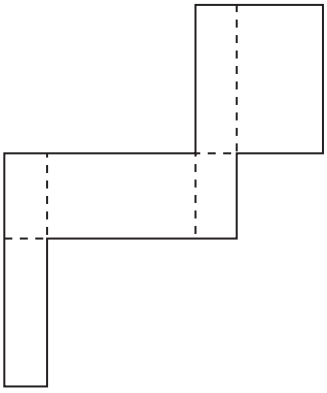
_____

9.



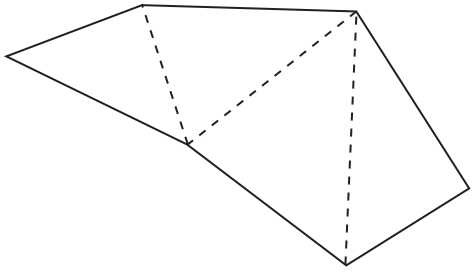
_____

10.



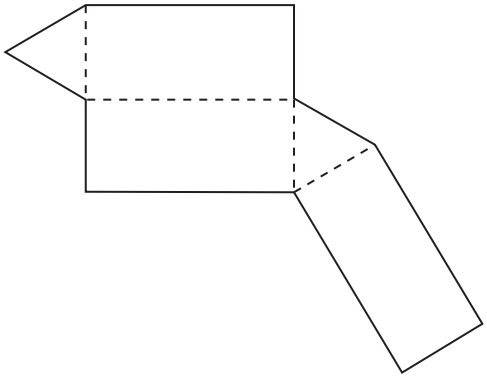
_____

11.



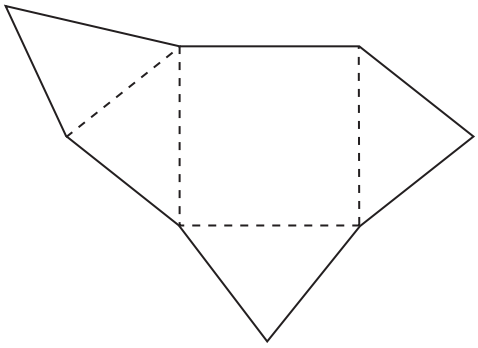
_____

12.



_____

13.



_____

10. a) Distance turned by gear A

$= 3 \cdot \pi d$

$\approx 3 \cdot 3.14 \cdot 18$

$= 169.56$ m

Distance each turned by gears B and C is the same as the distance turned by gear A.

Total distance

$= 3 \cdot 169.56$

$= 508.68$ m

≈ 508.7 m

The total distance the three gears turn is approximately 508.7 meters.

b) 150 toys are produced when gear A makes 2.5 revolutions.

150 toys $\rightarrow$ 2.5 revolutions

9,000 toys $\rightarrow \frac{2.5}{150} \times 9{,}000$

$= 150$ revolutions

Gear A will make 150 revolutions.

11. a) 47.1 inches

b) 40.5 minutes

c) 1,440 revolutions

12. a) Area of two large semicircles

$= 2 \cdot \frac{1}{2} \cdot \pi r^2$

$\approx 1 \cdot 3.14 \cdot 15 \cdot 15$

$= 706.5$ cm^2

Area of 16 small semicircles

$= 16 \cdot \frac{1}{2} \cdot \pi r^2$

$\approx 8 \cdot 3.14 \cdot 3 \cdot 3$

$= 226.08$ cm^2

Area of rectangle $= \ell w$

$= 2 \cdot$ radius of small semicircle $\cdot 8 \cdot 30$

$= 16 \cdot 3 \cdot 30$

$= 1{,}440$ cm^2

Area of placemat

$= 706.5 + 226.08 + 1{,}440$

$= 2{,}372.58$ cm^2

The area of the placemat is approximately 2,372.58 square centimeters.

b) The designer takes 25 minutes to dye 6 placemats.

6 placemats $\rightarrow$ 25 min

1,500 placemats $\rightarrow \frac{25}{6} \times 1{,}500$

$= 6{,}250$ min

He needs at least 6,250 minutes.

13. a) 8,139 square feet

b) 8 hours

Chapter 12

Lesson 12.1

1. Answers vary. Sample:
Base = *MNO*
Face = *JKNM*
Edge = $\overline{MO}$
Vertex = *J*

2. Answers vary. Sample:
Base = *PQRS*
Face = *TUVW*
Edge = $\overline{WV}$
Vertex = *P*

3. Answers vary. Sample:
Base = *EFGH*
Face = *HGCD*
Edge = $\overline{AE}$
Vertex = *B*

4. Answers vary. Sample:
Base = *ABCD*
Face = *XBC*
Edge = $\overline{AX}$
Vertex = *X*

5. Answers vary. Sample:
Base = *PQR*
Face = *YPQ*
Edge = $\overline{YR}$
Vertex = *Y*

6. b, f; c, d; a, e

7. b, c; a

8. cube

9. triangular prism

10. rectangular prism

11. triangular pyramid

12. triangular prism

13. square pyramid

Lesson 12.2

1. Area $= 8 \times 8$

$= 64$ in.^{2}

2. Area $= 12 \times 6$

$= 72$ cm^2

3. Area $= \frac{1}{2} \times 18 \times 8$

$= 72$ m^2

4. Area $= \frac{1}{2} \times 10 \times 14$

$= 70$ ft^2

5. Area $= \frac{1}{2} \times 8 \times (20 + 12)$

$= 128$ ft^2