Name:_____   Date:_____

Math 8/9 Enriched: 6.4 Nets and Surface Areas:

1. Name the solid given each net:
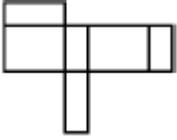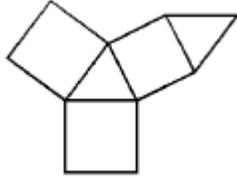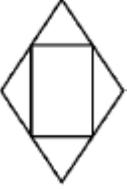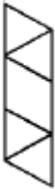
a)	b)	c)
d)	e)	f)
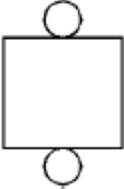
2. Draw a net for each of the following solids and find the surface area:

a)	b)
	10 cm, 9 cm, 12 cm, 15 cm
c)	d)
3cm, 5cm,	8 cm, 5 cm, 3 cm, 3 cm, 7 cm, 4 cm
e)	f)
5cm, 4	8 cm, 8 cm, 5 cm
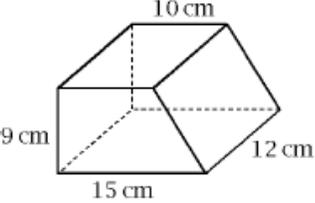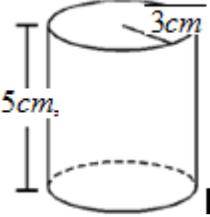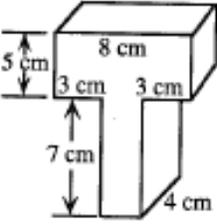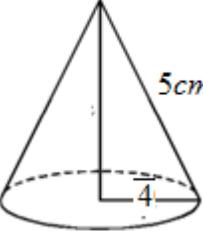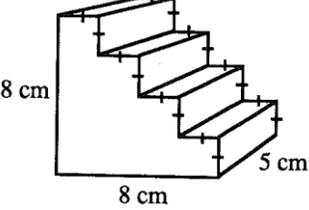
3. A square sheet of metal has four smaller squares removed from the corers as shown in the diagram. The metal is folded along the dotted lines to form an open box having 6cm by 6cm and volue 72cm3. What is the height and surface area of the box?

6 cm

6 cm
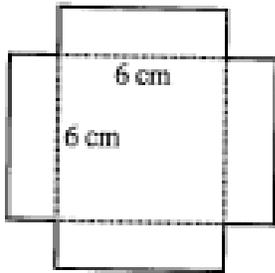
4. The sum of all the edges of a cube is 144cm. What is the surface area of the cube?

5. When the figure is cut out and folded to make a cube, the letter W is on one face. Which letter is on the opposite face?

	V	K
S	X	
W	R	
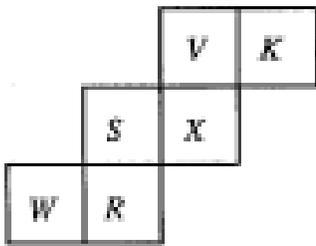
6. The areas of three of the faces of the rectangular box shown are 10cm2, 12cm2, and 30cm2. What is the volume of the box?

10 cm²

30 cm²   12 cm²
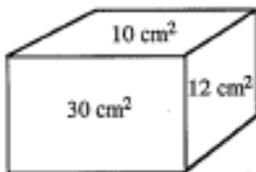
7. In cube ABCDEFGH, ABCD is a face and "M" is the midpoint of edge DE. Find BM if AB=4.

A

B

D

C

M

F

G

E

H
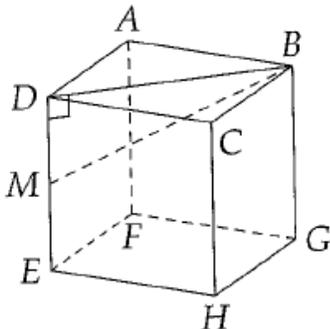
8. A fly is walking along the edges of a 10cm cube. The fly never walks along any edge more than once. What is the greatest distance, in centimeters, that the fly can walk?
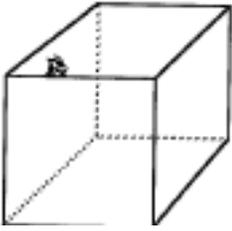
9. A Hollow piece of cylindrical pipe has an outside radius of 1.9 inches and an inside radius of 1.8 inches. The pipe is 4 feet long. How many square inches are in the total surface area of the pipe?

10. A 3x3x3 cube, a 2x2x2 cube, and a 1x1x1 cube are glued togeher as shown. What is the total surface area of this object, including the bottom?
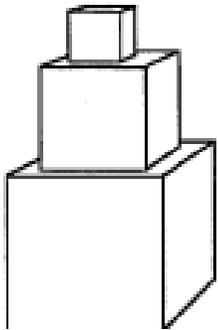

11. An ant wishes to travel from A to B on the surface of a wooden block with dimensions 2 x 4 x 8 as shown. What is the shortest distance the ant can walk?
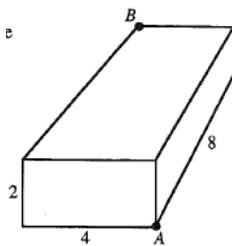
12. A 3cm by 3cm by 4cm block is built from 1cm cubes, each of which is coloured red or white. If the colours of the individual cubes alternate, what is the number of red faces which are hidden from sight in the interior of the block?

13. A regular sqaure pyramid is placed in a cube so that the base of the pyramid and the base of the cube coincide. The vertex of the pyramid lies on the face of the cube opposite to the base, as shown. An edge of the cube is 6 inches. How many square inches are in the positive difference between the surface area of the cube and the surface area of the pyramid? Express your answer as a decimal to the nearest tenth.
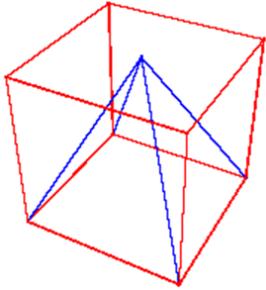
14. The numbers on the faces of a regular die are arranged so that opposite faces total 7; for example, 2 is opposite 5. The four dice shown have been placed so that the two numbers on the faces touching each other always total 9. The face labelled "P" is the front of one die as shown. What is the number on the face labelled "P"?
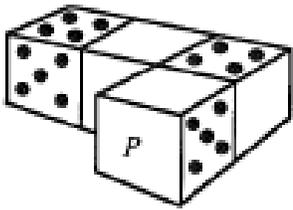

15. The diagram shows a painted rectangular solid. The solid was then cut along the dotted lines into 12 identical rectangular blocks. What is the total area of all unpainted surface?


4 cm   5 cm

←5 cm→
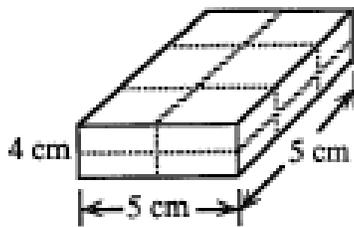
16. A rectangular box has dimensions 9cm by 6cm by 24cm. A second rectangular box has volume one-half of the first and has a base 6cm by 4cm. What is the height of the second box?

17. A 3 x 3 x 3 cube is painted red and then cut into 27 unit cubes. One of the cubes is chosen at random and then rolled. What is the probability that the side facing up will be red?

18. A 5 x 5 x 5 cube is formed by using 1 x 1 x 1 cubes. A number of smaller cubes are removed by punching out the 15 designated columns from front to back, top to bottom, and side to side. How many smaller cubes remain?
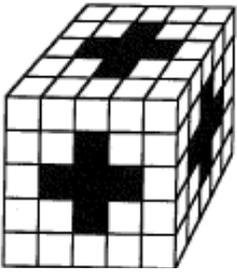
19. A 5 x 5 x 5 cube is formed using 1 x 1 x 1 cubes. A number of smaller cubes is removed by punching out the 15 designated columns and rows as described above. What is the number of smaller cubes remaining?
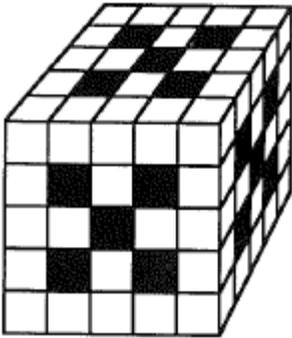
20. An ice cube tray has two sections as shown. Each section is 4cm high, 4cm long, and 3cm wide. One section is full of water and the other is half full. If the tray is tipped at a $45°$ angle towards the half full section, what is the volume of water that spills out?

4 cm

4 cm

3 cm