Name:

Date

__Per____

10.1 READING GUIDE: Cell Growth, Division, and Reproduction (p. 274-278)

Limits to Cell Size

2) Identify 3 substances to enter or exit a cell.

3) **TRUE** or **FALSE**. (Circle one). As the length of the sides of a cube increases, the volume increases more than the surface area. (hint: see figure 10.1)

4) How does the surface area change when a large cell divides into smaller cells that that the same total volume?

5) The textbook uses the size of a town as an analogy. Describe how a town can be used for this analogy in relation to information overload and traffic problems.

information overload analogy:______

traffic problem analogy:______

6) How does DNA replication solve the problem of information overload?

7) What is cell division's role in terms of the cell volume?

Cell Division and Reproduction

8) What is ASEXUAL REPRODUCTION?

9) Give example of an organism that reproduces asexually:

10) Define SEXUAL REPRODUCTION:

(OVER)



11) Compare the advantages and disadvantages of sexual and asexual reproduction.

	Asexual Reproduction	Sexual Reproduction
Advantages		
Disadvantages		

PROBLEM SOLVING:

12) The formula for finding the surface of a sphere, such as a baseball or basketball, is: $A = 4\pi r^2$, where r is the radius.

The formula for finding the volume of a sphere is V = (4/3) πr^3 .

A) Calculate the surface area and the volume of the baseball and the basketball shown below. Then write the ratio of surface area to volume for each sphere.

B) If the baseball and basketball were cells, which would possess a larger ratio of area of cell membrane to cell volume?

Baseball: radius = 3.6 cm

Basketball: radius = 12.2 cm



surface area of baseball:_____

volume of baseball:_____

SA:V ratio for baseball:_____

surface area of basketball:_____

volume of basketball:_____

SA:V ratio for basketball:

B) Which has the larger ratio of surface area to volume? Which would be a more efficient cell (in terms of information overload & molecular traffic / transport)?