T F 1. A 200 g piece of iron has four times the density of a 50 g piece of iron.

T F 2. Twenty 1 ml blue cube base ten blocks and two 1 cl blue rod base ten blocks possess the same volume and mass.

T F 3. If you lower the pressure on a marshmallow, its volume and density changes.

T F 4. When you squeeze the sides of a sinker bottle, the density of any air inside the bottle will increase.

5. A Diet Coke and a regular Coke can easily be distinguished from each other without opening the cans by the difference in their:
   A. Shape      B. Density
   C. Volume     D. Temperature

6. A property of matter that can be used for identification of materials is:
   A. Mass      B. Volume
   C. Density  D. Temperature

7. A solid sinks or floats in a liquid due to its:
   A. buoyancy      B. Mass
   C. Volume  C. Temperature

8. Of the following substances, the most dense is:
   A. Cork       B. Lead
   C. Ice  D. Gold

9. The volume of an unknown solid in the shape of a cube that sinks in water and doesn’t dissolve can be determined by ________.
   A. Measuring its dimensions  B. Weighing it
   C. Water displacement  D. Guessing
   E. Both A and C

10. The intercept of the mass vs. volume graph ________________.
    A. is zero      B. is the rise over the run
    C. depends on the sample  D. is one gram per cc.

11. The slope of the mass vs. volume graph ________________.
    A. is zero      B. is the mass
    C. is the density  D. depends on how much mass you have

12. A student measures the mass of a toy car. The student finds that the mass is 3 hg plus 2 dag plus 3g. What is the mass expressed in dg?
    A. 3.23 dg  B. 0.323 dg  C. 323.0 dg  D. 3230 dg  E. None of these.

13. Mass is a measure of ________________.
    A. the amount of space that an object occupies  B. the amount of matter in an object
    C. the density of an object  D. how heavy an object is.
    E. Both B and D are correct.
14. What is the minimum volume that should be measured using the graduated cylinder that we used in the “Densities” activity to get an error acceptable for elementary school classrooms?
A. 200 ml  B. 2 ml  C. 10 ml  D. It doesn't matter how much volume you use.

15. Compare the volume of 5 g of ice to 5 g of water. The volume of water is
A. less  B. the same  C. greater.

16. A 1-cm$^3$ piece is removed from a very large piece of modeling clay with a volume of over 100,000 cm$^3$. Which piece has the lowest density?
A. The small piece.  B. The large piece.  C. The large and the small piece have the same density.

17. The mass of a sample of water is 40 g. The volume of this sample is
A. 60 cm$^3$  B. 40 cm$^3$  C. 40 dal  D. 40 cl

18. A rock with a volume of 5.0 cm$^3$ has a mass of 50.0 g. Its density is ____________.
A. 5.0 g/cm$^3$  B. 8.0 g/cm$^3$  C. 0.02 g/cm$^3$  D. 10.0 g/cm$^3$

19. Imagine a 10 ml chunk of aluminum ($\rho = 2.7$ g/cm$^3$) and a 10 ml chunk of iron ($\rho = 7.9$ g/cm$^3$). Which of the following is true?
A. The chunk of iron is smaller than the chunk of aluminum.
B. The chunk of iron is more massive than the chunk of aluminum.
C. The chunk of aluminum is smaller than the chunk of iron.
D. Both objects have the same mass.

20. Buoyancy can be explained by differences in ______________ on the top and bottom of an object placed in a fluid.
A. mass  B. pressure  C. density  D. volume

21. In the marshmallow mash experiment, which of the following properties of the marshmallows changed?
A. volume  B. mass  C. density  D. chemical properties  E. both A and C

22. Which of the following are the same?
A. 100 cc and 10 ml  B. 100 cc and 10 dl  C. 100 cc and 1 dl  D. 100000 cc and 1 dal

23. The dimensions of a wood stick is 2 dm x 2 cm x 2 mm. What is its volume in liters?
A. 8 liters  B. 0.8 liters  C. 0.08 liters  D. 0.008 liters

24. What is the slope and Y intercept of the line produced when the data below is plotted?
A. $m = 6; b = 6$  B. $m = 4; b = 6$  C. $m = 3; b = 3$  D. $m = 6; b = 4$

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>10</td>
<td>46</td>
</tr>
<tr>
<td>15</td>
<td>66</td>
</tr>
<tr>
<td>20</td>
<td>86</td>
</tr>
<tr>
<td>25</td>
<td>106</td>
</tr>
<tr>
<td>30</td>
<td>126</td>
</tr>
</tbody>
</table>
See the graph below.

25. What is the density of sample 1?
   A. 1 g/ml  
   B. 3 g/ml  
   C. 6 g/ml  
   D. None of these

26. Sample 1 is definitely not _______.
   A. rock  
   B. glass  
   C. water  
   D. a metal

27. What is the density of sample 2?
   A. 1 g/ml  
   B. 6 g/ml  
   C. 3 g/ml  
   D. None of these

28. What is the slope and Y intercept of the graph below?
   A. m = 4 ; b = 8  
   B. m = 8 ; b = 68  
   C. m = 3 ; b = 8  
   D. m = 8 ; b = 4

29. If you measured the length of a rod with a standard meter stick and found the length to be 5 dm, what percent error did your measurement possess?
A. 500%  
B. 2%  
C. 0.2%  
D. There is not enough information

30. If a loaf of bread is compressed, its _____________
A. density increases.  
B. mass increases.  
C. density decreases.  
D. volume increases.  
E. Both A and D are correct

31. In “Rice Crispy Crunch” which property (or properties) of the sample did not change?
A. mass  
B. density  
C. volume  
D. chemical  
E. Answers A & D

32. In the Quicker Picker Upper experiment, which science process skill was not used?
A. measuring  
B. observing  
C. communicating  
D. inferring  
E. identifying variables

33. The primary source of error in the “Densities” experiment when you determined the density of the jewels was measuring the _____________.
A. mass of the jewels  
B. volume of the jewels  
C. density of water  
D. mass of the water

34. Based upon your experiences in this class, which of the following is correct?
A. Mass is independent of shape but volume is dependent of shape  
B. Volume is independent of shape, but mass is dependent of shape  
C. Both mass and volume are dependent on an object’s shape  
D. Both mass and volume are independent of an object’s shape

35. A student is comparing the properties of two centiliter plastic sticks, one blue and one red. She places them both in a container of water. The red centiliter stick sinks, while the blue one floats. Which of the following is true?
A. The two sticks have different masses by measurement  
B. The two sticks have different densities by observation  
C. The two sticks have different masses by inference  
D. Both B and C are true  
E. None of these are possible

36. Which pair of points below would be best to use to find the slope of the line below?
A. 2 and 5  
B. 1 and 3  
C. 3 and 4  
D. 1 and 5