

SM2 1.2: Using Exponents

Given each measurement, sketch and describe two unique objects that could have this unit of measurement.

1) $20 m^2$

2) $15 cm^3$

3) $30 in$

4) $72 cubic ft$

Given each quantity, decide which unit of measurement would be appropriate and justify your response.



5) Volume of the enclosure of the Louvre

- a) m
- b) m^2
- c) m^3

Justify:

6) Surface area of one of the side panels of the Louvre

- a) m
- b) m^2
- c) m^3

Justify:



7) Radius of a circular cross section of a can of Coke

- a) in
- b) in^2
- c) in^3

Justify:

8) Volume of the inside of the can of Coke

- a) in
- b) in^2
- c) in^3

Justify:



9) Circumference of the white circle on the 8-ball

- a) cm
- b) cm^2
- c) cm^3

Justify:

10) Surface Area of the 8-ball

- a) cm
- b) cm^2
- c) cm^3

Justify:



11) Area of the grass inside the track

- a) m
- b) m^2
- c) m^3

Justify:

12) Length of a border between lanes

- a) m
- b) m^2
- c) m^3

Justify:

Find the measure of each quantity. Include units.

13)



The Epcot Center is one of the most recognizable structures of any theme park. It has a diameter of 165 ft . What is the volume of the sphere to the nearest foot?

15)



Find the circumference of a pizza with a radius of 5 in .

14)



Find the area of the face side of a \$10 bill if the length is 6.14 inches and the width is 2.61 inches

16) You have decided to try to “improve” your math teacher’s mood. You figure that a happy teacher means better scores for you. So you decide to buy some chocolate. You are torn between buying a solid chocolate cylinder (it has a radius of 1 in . and a height of 6 in .) or a solid chocolate triangular prism (the triangular base is 3 in ., the triangle height is 2.5 in ., and the height of the prism is 5 in .).

You decide your “mood improvement” plan will go better if your teacher gets the most chocolate possible. Which bar should you buy? (P.S. Your teacher is smart enough to realize this is a bribe. They will eat the chocolate anyways, but you will see no grade improvement. Feel free to try though.)

17)



In this unicorn cake, the ears, horn and hair are made entirely of frosting. The cake has a 9" diameter and is 7" tall. Find the volume of the cake.

18)



Find the area of a pizza with a radius of 5 *in.*

19) The new ice cream store in town sells single and double scoops in sugar cones. A single scoop costs \$2.39 and a double scoop costs \$3.79. The sugar cone is 5 *in.* tall with a diameter of 2 *in.*

The single scoop consists of filling the cone completely with ice cream, then placing a hemisphere (that has the same diameter as the cone) of ice cream on top of the cone. The double scoop is a perfect sphere of ice cream (with the same diameter as the cone) placed on top of a single scoop.

Find the volume of ice cream you get with a single scoop.

20)



Find the area of the Illuminati triangle if the base is 29.6 *cm* and the height is 30 *cm*.

Because of an overactive fault, an earthquake swallows up Superman's love interest, Lois Lane. Ignoring the fact that he'd likely kill everyone on the planet, Superman decides to use his ability to fly to zoom around the planet. He figures he can turn back time and prevent the death of his girlfriend by flying concentric circles around the planet, reversing the spin of Earth, making time move backwards (this would not work and would be a stupid plot for a movie).



The radius of Earth is about 3959 miles. Assume that Superman flies to a height where the atmospheric pressure is weak enough to consider it the start of "outer space", which is roughly 50 miles above the surface of the planet.

21) Approximate the distance Superman flies around the planet to the nearest whole mile.

22) Suppose Superman flies around the planet 30 times before the Earth came to a stop. How far did Superman travel to the nearest mile?