

SM2 1.2: Using Exponents

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

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| <p>1) $20 m^2$
Two objects that include an area
(like a rectangular area or a surface area)</p> | <p>2) $15 cm^3$
Two objects that include a volume
(like a cylindrical volume or a spherical volume)</p> |
| <p>3) $30 in$
Two objects that are a length
(like a radius or a circumference)</p> | <p>4) $72 cubic ft$
Two objects that include a volume
(like a cylindrical volume or a spherical volume)</p> |

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

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| <p>5) Volume of the enclosure of the Louvre
a) m
b) m^2
c) m^3
Justify:
3-dimensional space</p> | <p>6) Surface area of one of the side panels of the Louvre
a) m
b) m^2
c) m^3
Justify:
2-dimensional space</p> |
| <p>7) Radius of a circular cross section of a can of Coke
a) in
b) in^2
c) in^3
Justify:
1-dimensional length</p> | <p>8) Volume of the inside of the can of Coke
a) in
b) in^2
c) in^3
Justify:
3-dimensional space</p> |
| <p>9) Circumference of the white circle on the 8-ball
a) cm
b) cm^2
c) cm^3
Justify:
1-dimensional length</p> | <p>10) Surface Area of the 8-ball
a) cm
b) cm^2
c) cm^3
Justify:
2-dimensional space</p> |
| <p>11) Area of the grass inside the track
a) m
b) m^2
c) m^3
Justify:
2-dimensional space</p> | <p>12) Length of a border between lanes
a) m
b) m^2
c) m^3
Justify:
1-dimensional length</p> |

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?
 $2,352,071 \text{ or } 748687.5\pi \text{ ft}^3$
- 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
 16.025 in^2
- 15) Find the circumference of a pizza with a radius of 5 in .
 $31.416 \text{ or } 10\pi \text{ in}$
- 16) Which bar should you buy?
Cylinder: 18.85 in^3
Prism: 18.75 in^3
The cylinder has more chocolate.
- 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.
 $445.321 \text{ or } 141.75\pi \text{ in}^3$
- 18) Find the area of a pizza with a radius of 5 in .
 $78.540 \text{ or } 25\pi \text{ in}^2$
- 19) Find the volume of ice cream you get with a single scoop.
 $7.330 \text{ or } 2.3\pi \text{ in}^3$
- 20) Find the area of the Illuminati triangle if the base is 29.6 cm and the height is 30 cm
 444 cm^2
- 21) Approximate the distance Superman flies around the planet to the nearest whole mile.

We want to find the circumference of the planet. The radius of the planet is 3959 miles and then we're adding on an additional 50 miles of clearance space, so our total radius is 4009 miles.

$$C = 8018\pi \text{ miles}$$

$$C \approx 25189 \text{ miles}$$

- 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?

$$30 \cdot C = 30 \cdot 8018\pi = 240540\pi \approx 755679 \text{ miles or if you used your answer from \#20, } 755670 \text{ miles}$$