Volume, surface area and scale factor review questions:

1. A. Sketch a net for the bin:





B. Find the volume for the bin

The base of the prism is the trapezoid, and the height of the prism is 2 ft, so

Area of base: 

Volume: 

C. Sarah wrote the following as her work for finding the surface area of the bin. Please tell whether she is correct or not, and if she is incorrect, please make corrections to her work.

Sarah: the front of the bin is a square and a triangle so the area is 

the top is a rectangle:  and the side is a rectangle: .

Multiply by 2 for the hidden sides, so the surface area is 

This is not correct because the hidden sides are not all the same as the visible sides.

Correct answer is



|  |  |
| --- | --- |
| 2. Find the volume of this pyramid with a square base:    For the volume, you need the height, not the slant height:      Area of base:  Volume: | 3. Find the surface area and volume of this pyramid with a square base:  For the volume you need the height (given) for the surface area you need the slant height (need to find)  Area of base:  Volume:      Area of a triangular face:    Surface area of pyramid: |

4. For each shape tell whether it is a prism or not. Explain, using properties of prisms, how you know that it is or is not a prism. If it is a prism, shade in one of its bases, and show the height.

A. B C.

  



|  |  |  |
| --- | --- | --- |
| Not a prism (there are 4 trapezoidal sides) | Prism  Base is shaded pentagon  Height is bold horizontal segment | Prism  Base is shaded trapezoid  Height is bold segment connecting trapezoids |

5. These shapes are similar. Find the scale factor from the smaller to the larger (give the fraction answer) and find the missing side length.



Scale factor: 

Missing side length is 

6. These shapes are similar. Find the scale factor from the larger to the smaller (give the fraction answer) and find the missing side length.

 

Scale factor: 

Missing side length: 

8. Mrs. Geometry has made a rectangle on the board that is 4”x6”. John has made a rectangle that is two inches longer and two inches wider. Is John’s rectangle similar (the same shape as) Mrs Geometry’s rectangle? If not, what would be the dimensions of a rectangle that is two inches wider than Mrs. Geometry’s?

John’s rectangle is 6” × 8”

 and  so  which means the rectangles aren’t similar because the sides aren’t proportional.

If I want a rectangle that is similar and 2 inches wider, then I need to solve:

 The rectangle would have dimensions 6” × 9”.

Note: there is another correct answer if you assume that 6” is the width rather than 4” being the width—that would be 5 1/3” × 8”

9. I can stamp a dinosaur either small or large. The large dinosaur is twice as long and twice as high as the small dinosaur. The small dinosaur covers about 300 pixels. About how many pixels does the large dinosaur cover?

The area of the large one should be  times the area of the small one, so the large one would cover about  pixels.

10. I took a picture of a heart that was 6 cm2 and stretched it so it was 3 times as wide and 1 1/2 times as high. What is the area of this new heart?





11. I have two similar (proportional) pictures of a heart. The larger picture was made by enlarging the smaller one to 300% on a standard copy machine. If the area of the smaller heart is 4 cm2, what is the area of the larger heart?





12. I have two similar/proportional pictures of a bus. If the smaller bus has area 15 cm2, and the area of the large bus is 60cm2, what is the (length) scale factor that compares the large one to the small one?

The area ratio is  so the scale factor is 