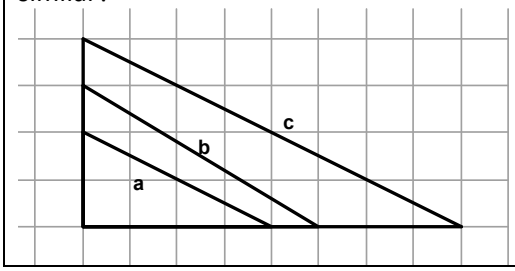
Math 247 Final exam topics and practice, Spring 2018

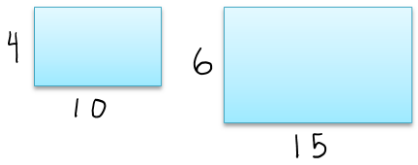
About half of the final exam will be on the most recent content:

1. Are these shapes similar?

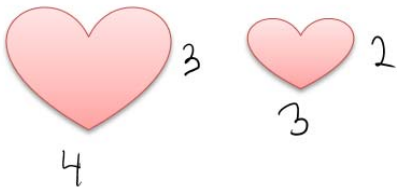
a. Which pair(s) of these triangles are similar?



Are these similar?

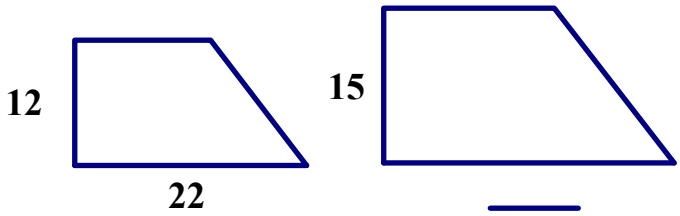


Are these similar?

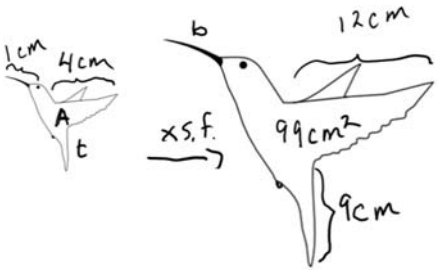


Find lengths, areas and volumes using scale factors:

2. These shapes are similar. Find the length of the missing side



3.
a. what is the length of the beak of the larger bird?
b. what is the length of the tail of the smaller bird?
c. what is the area of the smaller bird?



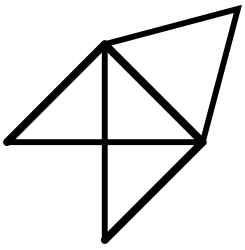
4. Tara makes stuffed dragons. She wants to make a larger, proportional (similar), dragon to display in the shop window. Her regular dragons are 1 1/2 ft. long. She plans to make a display dragon that is 6 ft long.
a. Regular dragons are 8 inches high. How tall will the larger dragon be?
b. It takes 12 ft^2 to make a regular dragon. How much square feet of fabric should she buy to make the larger dragon?
c. The fabric she buys is 1-yard (3 ft) wide, how many feet long should the 1-yard wide fabric be to get the correct amount of fabric?
d. It takes 2 lbs. of stuffing to fill the regular dragons. How much stuffing should she buy for the large dragon?

5. I took a picture of a heart that was 6 cm^2 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?

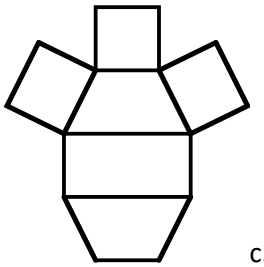
Prisms and pyramids, nets and surface area

6. Describe/name the polyhedron that would be constructed from this net

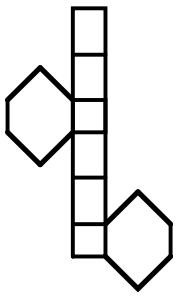
a.



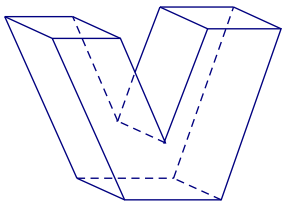
b.

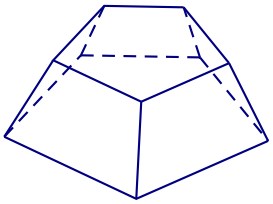


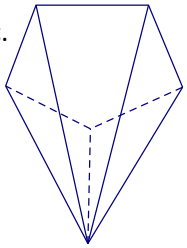
c.

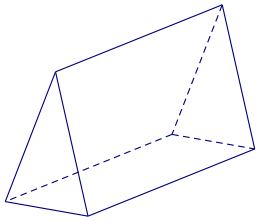


7. For each of these, tell if it is a pyramid, a prism or neither. If it is a pyramid or prism, shade a/the base.

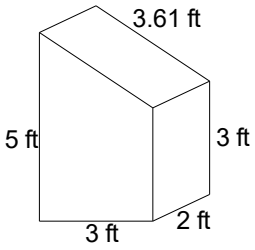
a. 

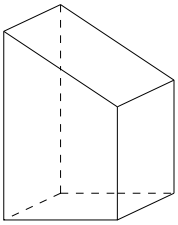
b. 

c. 

d. 

8. a. Sketch a net for the bin (label the lengths on your sketch)





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

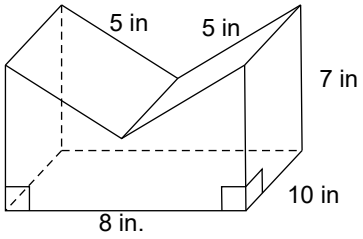
Sarah: the front of the bin is a square and a triangle so the area is

$$3\times 3+\frac{1}{2}(3\times 2)$$

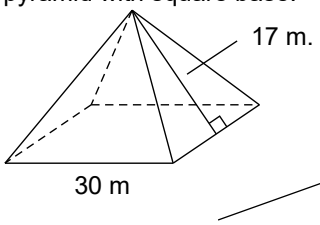
the top is a rectangle: 3.61×2 and the side is a rectangle: 2×3

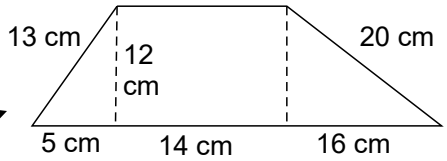
Multiply by 2 for the hidden sides, so the surface area is $2\times 25.22=50.44$

9. Find the surface area and volume of these two solids:



pyramid with square base:





10. Sketch a net of a prism with the base shown above, and where the distance between the bases is 6 cm.

Graphing data: bar graphs, picture graphs, line plots, histograms and box plots; mean, mean absolute deviation, median and quartiles.

11. For a given set of category data, make a (scaled) bar graph or picture graph.

12. For a given set of number of measurement data, make a line plot.

13. For a sorted set of number data given for several categories or populations: find the median and quartiles, and make a box plot comparing the data between the categories. Write an summary and conclusion that compares the data in the different categories.

14. For a sorted set of number data, find the mean, mean absolute deviation, make a histogram, and show the mean and spread on the histogram.

About half of the final exam will be on topics from previous exams, including:

- Expressing ratios, and solving problems with ratios
- Solving problems with percents
- Solving addition, subtraction, multiplication and division of fraction word problems with diagrams (show and explain the process
- Writing addition, subtraction, multiplication and division of fractions word problems
- Explaining how to get the addition and multiplication of fractions algorithms from a diagram.
- Comparing fractions using the equal numerators, equal denominators, residual and transitive strategies.
- Explain equivalent fractions using splitting and grouping.