NAME:_____ Due Date:

_____

Unit 6 Assignment

Knowledge /13	Thinking /13	Communication /11	Application /11

You and 3 friends have decided to make a trip to New York City! After crossing the border you notice that everything is in Imperial units… Thankfully you remember what you learned in your Grade 10 math class and everything will be okay!

ANSWER QUESTIONS NEATLY AND IN FULL SENTENCES

Section 1: Converting Between Metric and Imperial Units of Measurement

1. Your first issue arises when the border guard asks you how tall you are. By this time in your life you are 5’ 9” tall, but your license lists your height in cm! The border guard is demanding you tell him your height in cm!

   What is your height in cm? (1K, 2A, 1C)

2. After getting through the border check you are on your way! But wait, the speed limits and distances are posted in miles per hour… The limit is 60 mph, and it is 395 miles to NYC.

   i. What is the speed limit in km/h? (1K, 1C)

   ii.How many km to NYC? (1K, 1C)

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   iii. How long will it take you to get to NYC in hours and minutes if you drive the speed limit the whole way? (2A, 1C)

3. Things just aren't working out for you! You are approaching a bridge with a set weight limit of 4000 lbs. Luckily your manual says your car weighs 1400 kg and you know that you and your friends combined weigh 600 pounds.

    Can you cross the bridge? (1K, 2T, 1C)

4. After all this math, you are thirsty and decide to stop for a drink and gas in Buffalo. You want a can of pop and one of your friends wants a bottle. The shopkeeper does not like Canadians and demands that you specify how many fluid ounces of pop you would like. You remember that a can of pop in Canada holds 355 mL, and a bottle holds 591 mL. You also note that gas costs $3.73/gal here and was 122.5 cents/L in Gravenhurst.

    i. How many fluid ounces of pop do each of you have to ask for? (2K, 2C)

    ii Does gas cost more in Buffalo or in Gravenhurst? Show your work! (2A, 2T, 1C)

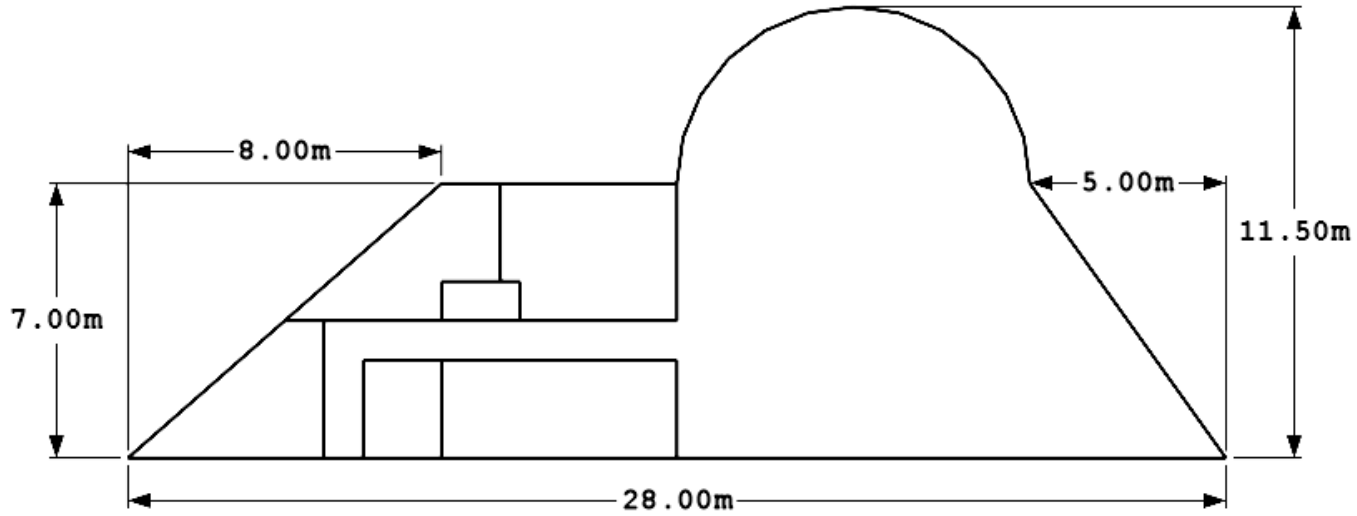
Section 2: Converting Area and Volume, Composite 2D Shapes

5. While on the road, you and your friends started talking about the flat you rented on Airbnb for your trip. You tell your friend that according to the listing the flat has 7 rooms: Entertaining space/kitchen, 4 bedrooms, and 2 bathrooms. The ad said that the square footage for the loft is 2500 ft^2. In order to have something to compare that to. You know that your house is 165 m^2, so you decide to use that as a frame of reference.

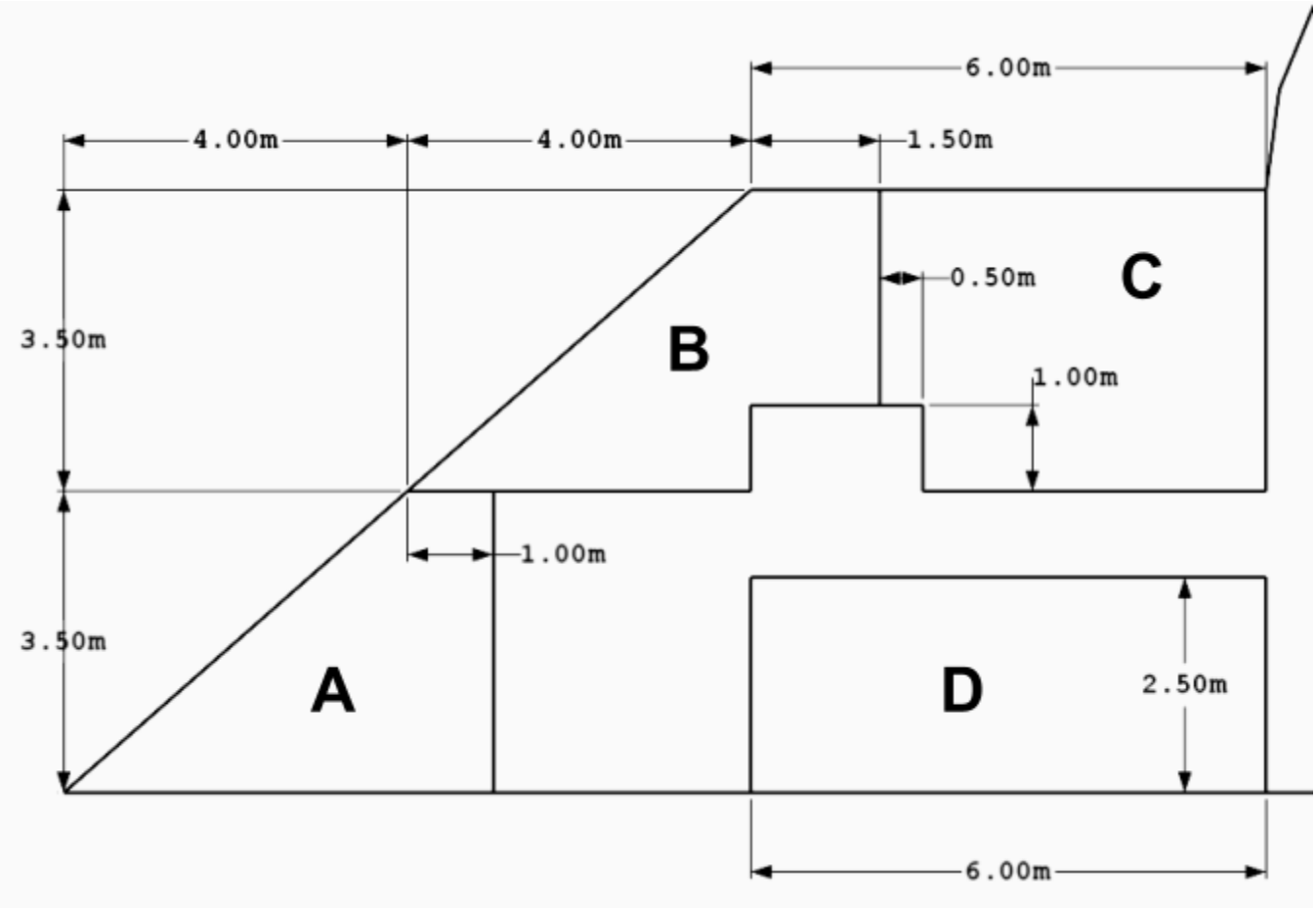
    Is your house larger or smaller than the loft you rented? Show your work (1K, 2A, 1C)

6. Finally! You have arrived in New York City. After you get to the loft and bring your bags up, you notice that there is a floorplan drilled into the wall that shows the dimensions of the loft (shown below). For some reason it is marked in metres instead of feet despite being in America (must have been a European contractor or something). Is the listing of 2500 ft^2 accurate? (2A, 4T, 2C)

    (Hint find the square footage based on the diagram)



7. It's time to start choosing rooms! You all agree to choose rooms by your size. Biggest person gets the biggest room, and smallest person gets the smallest room. Now to figure out how big the rooms are. Below is a diagram with enough dimensions that you should be able to figure out the room sizes.



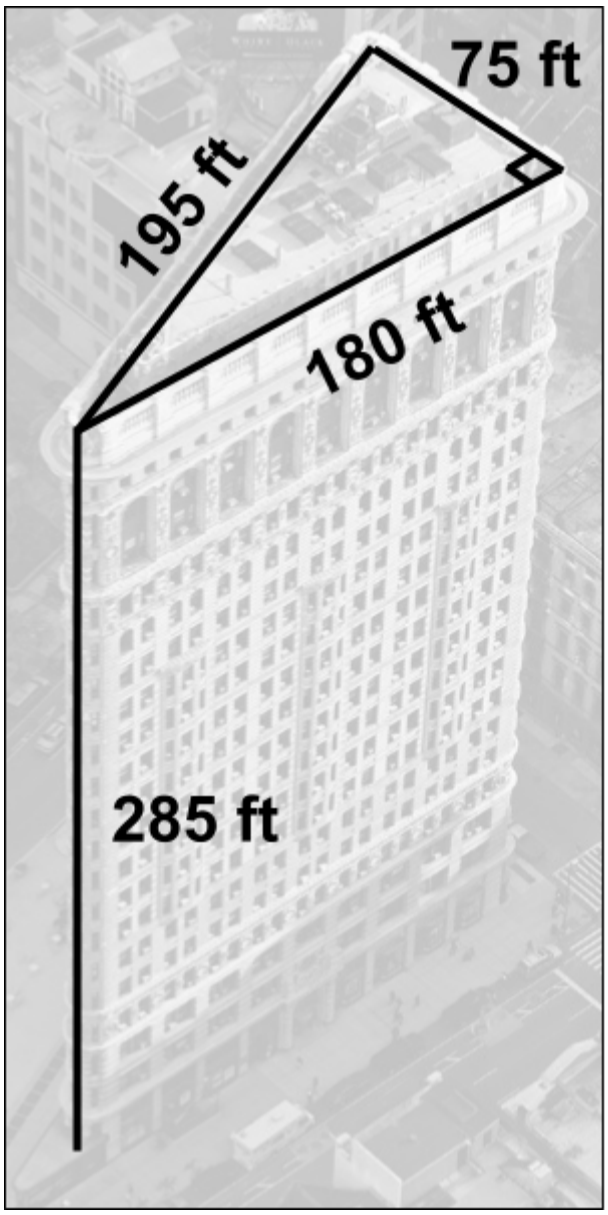
Determine the size of the each room and fill in the sizes at the bottom of the page. (4K, 3T, 2C)

Room A: _____ Room B: _____

Room C: _____ Room D: _____

Section 3: Surface Area

8. While out exploring the city, you see the Flatiron Building! A tour guide states that the surface area of one of this iconic building has a surface area of 135,000 ft^2. Is she correct?



i. Use the diagram below to determine the surface area of the building. (1K, 3A, 1C)

ii. What is that surface area in m^2 (metres squared)? (1K, 1A, 1C)

Section 4: Volume

9. After your walking tour of New York City, you and your friends decide to get an ice cream cone at Ample Hills Creamery. After a considerable amount of taste testing, you decide on a flavour and get a single scoop, after all, you just had a bunch of free samples, you're pretty full already! This gets you thinking… How much ice cream am I having now?

Determine the volume of ice-cream if the radius of the scoop is 5 cm and the height of the cone is 40 cm. You can assume that the entire cone is also full of ice cream. (2A, 2T, 1C)

(hint: there is a cone at the bottom and a hemi-sphere at the top)