1) Count the number of eyes in the classroom by counting by 2s, and the fingers of the people at your table by counting by 5s or 10s.

2) Snap together as many cubes as you need to make a train 25 cm long. Use a 30-cm ruler to check. Predict the number of cubes needed to make a train 1 m long. Explain your thinking.

3) Choose a word:

likely | unlikely | expect | or | probably

to help explain the chances of each of these statements happening:

—It will snow today.

—We will have recess tomorrow.

—Your parents will give you a bike for your birthday.

—You will see a movie at home this month.

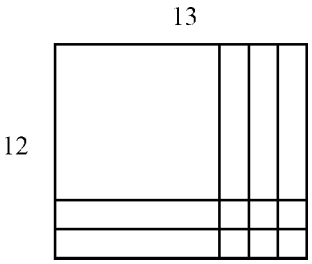
—When you shake and spill 4 counters of two different colours, you will see only one colour.

—When you roll a die, you will get a number greater than 1.

4) Order the following: 25.5, 26.5, 2.5, 27.5 and 24.

5) Design and construct a measuring device; e.g., a planimeter with a horizontal vernier scale and cardboard wheel, graduated accordingly. Apply the constructed instrument to find, according to scale, the areas of large, irregular shapes.

6) Greg and Nabat used base-10 blocks to build an array for 12×13.



Greg and Nabat did not record their thinking in the same way.

GREG
$12 \times 13 = (10 \times 13) + (2 \times 13)$
$12 \times 13 = 130 + 26$
$12 \times 13 = 156$

NABAT
$12 \times 13 = (12 \times 10) + (12 \times 3)$
$12 \times 13 = 120 + 36$
$12 \times 13 = 156$

Explain the reasoning of each student. Build a model to explain 24×21.

7) Compare the results of using different approximations for $\sqrt{2}$ in calculations.

a) Calculate $\sqrt{2} \times \sqrt{2}$ as 1.4×1.4.

b) Calculate $\sqrt{2} \times \sqrt{2}$ as 1.41×1.41.

8) —Give as many similarities and differences about these figures as you can.

—Draw a figure that you think is like Figure 1. Explain why you think it is like Figure 1.

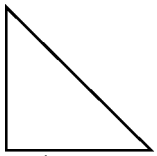


Figure 1

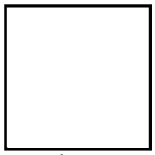
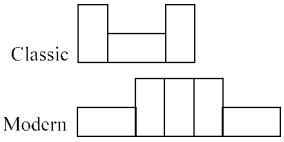


Figure 2

9) On a map of Canada, mark the cities Whitehorse, Victoria, Edmonton, Yellowknife, Regina and Winnipeg. Devise an airplane network so that you can get from any one of these cities to any other one of them by changing planes, at most, once. Each route can have no more than two stops. You want the least number of routes.

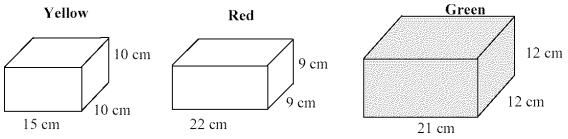
10) Ms Fix would like to have a brick border for one side of her garden. She does not know yet which of the two basic patterns to choose: Classic or Modern.



In order to make the brick border long enough, she has to repeat the basic pattern a number of times.

The length of the side of the garden is 14.20 metres.

At the brickyard, Ms Fix can choose from three different kinds of bricks.



—Write a letter to Ms Fix in which you explain to her what to do. Include in your letter what bricks she can buy, how many, and justify your solution to her design problem.

—Actually, Ms Fix wanted to have the Modern pattern, 25 times repeated along the side of her garden, but she cannot find bricks that she can use. What would be the dimensions of the brick she is looking for? Explain how you got your answer.

—Write a rule, or a formula, that Ms Fix can use to find out how many bricks she needs for any length of a border, and for any kind of brick. Explain how your rule, or formula, works.

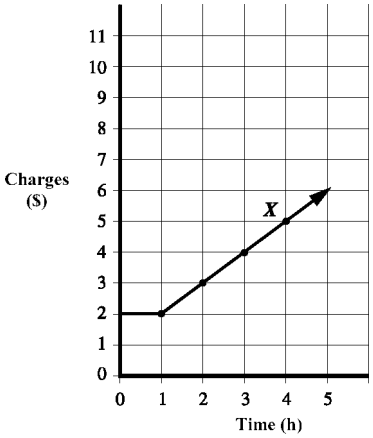
11) For the arithmetic sequence 7, 11, 15, 19, . . . , find the 29th term.

12) Sketch $f(x) = |x - 1| - 4$, and determine the values of x for which $f(x) > 0$.

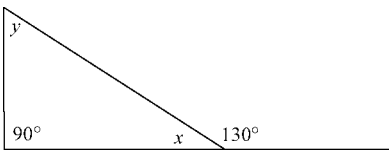
13) This graph shows how much Mitch charges to babysit. How can you find out how much he would get paid for $2\frac{1}{2}$ h?

Can you determine how much he would get for $\frac{1}{2}$ h? Explain.

Explain, in words, how Mitch gets paid. Estimate how much he would get paid for 6 h. Extend the graph to check your estimate. How long did he babysit, and how much did he earn at the point *X*?



14) Find the measures of the indicated angles in the diagram below.



15) The perimeter of the square $\angle MNP$ is 60 cm. Find the:

—diameter of the circle

—circumference of the circle

—area of the circle

—area of the shaded region