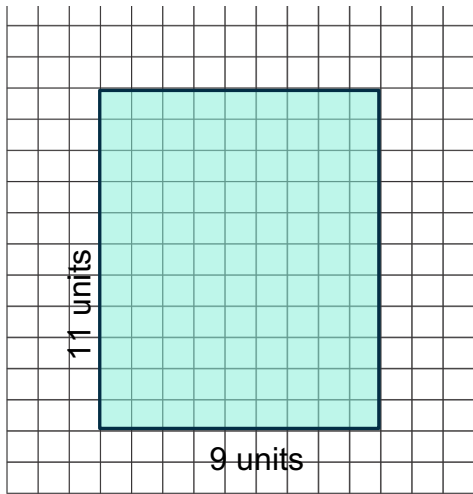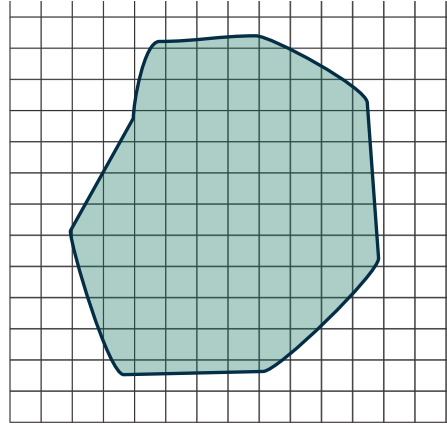Math 4b. Classwork.

Area of the shape is the measure of part of the plane, covered with the shape.

To find the area of the shape we need to find out how many area units (cm^2, m^2, mm^2) are covered with the figure.
We can calculate the area of the rectangle:

$$S_{rectangle} = a \cdot b = 11 \cdot 9 = 99 units^2$$

Calculating areas of other shapes might not be that straightforward.
Which part of the plane does the shape on the right cover? In other words, what is its area? We can answer this question only approximately, give an estimate of the area. Inside the shape there are 6 squares, 11 squares (colored purple) cover it partially. So, the area of the shape is less than 6+11=17 squares, but bigger than 6 squares.
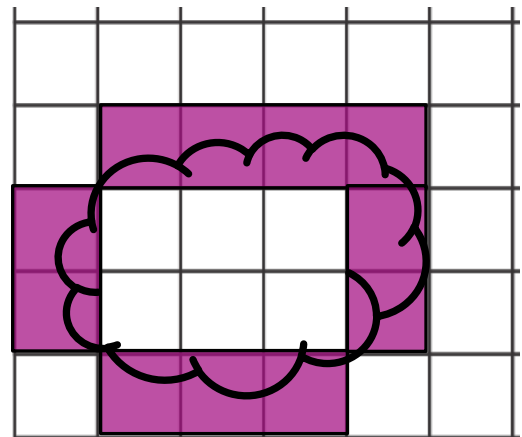
$$6 < S < 17$$

Homework

1. Peter took 5 exams at the end of the year. Grade for exams are A, B, C, D. How many different ways are there to fill his report card?

2. While protecting his swamp, an ogre fights with four ironclad knights: Sir Allister, Sir Ballister, Sir Callister, and Sir Dallister. He intends to knock them down one by one, but he is not yet sure in what order. How many ways are there for the ogre to knock the knights down?

3. The area of the filled rectangle on the right is between 12 and 15.
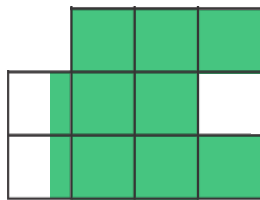
   $$12 < S < 15$$
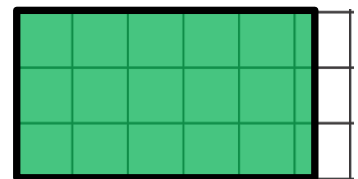
   Find between which numbers the areas of the following figures:
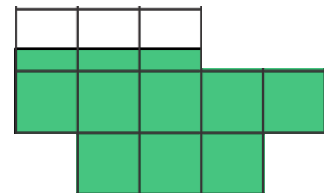
   a)   b)   c)
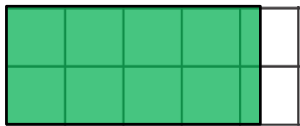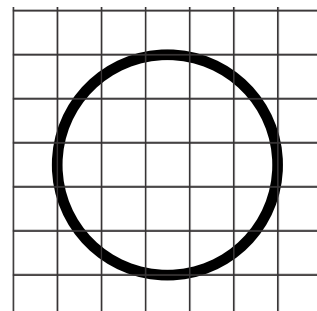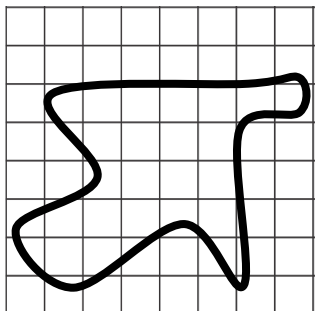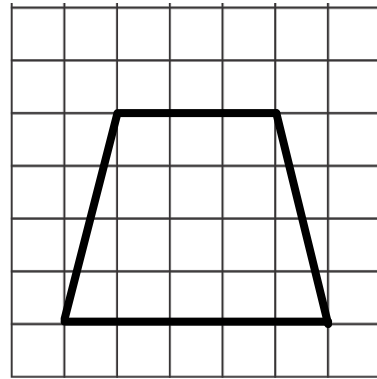
   $< S <$ $< S <$ $< S <$
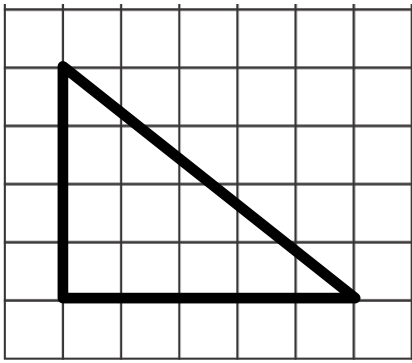
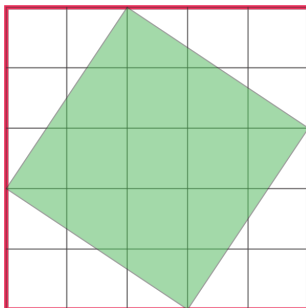4. Find between which numbers the area of the following figures are if the area of one cell is 1 cm^2.
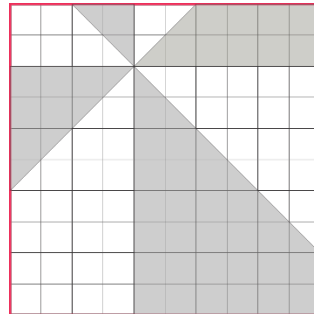
Is it possible to find the area of any of the 4 shapes above more precisely?

5. How will the area of a square change if we increase the length of the side 2 times? 3 times? $2\frac{1}{2}$ times?

6. Which part of the square is shaded?

7. Prove that the area of the green square is 13 cm^2 (assuming that the grid is 1 cm in each dimension).

8. Compare fractions:

Example: $\dfrac{1}{6} < \dfrac{1}{3}$
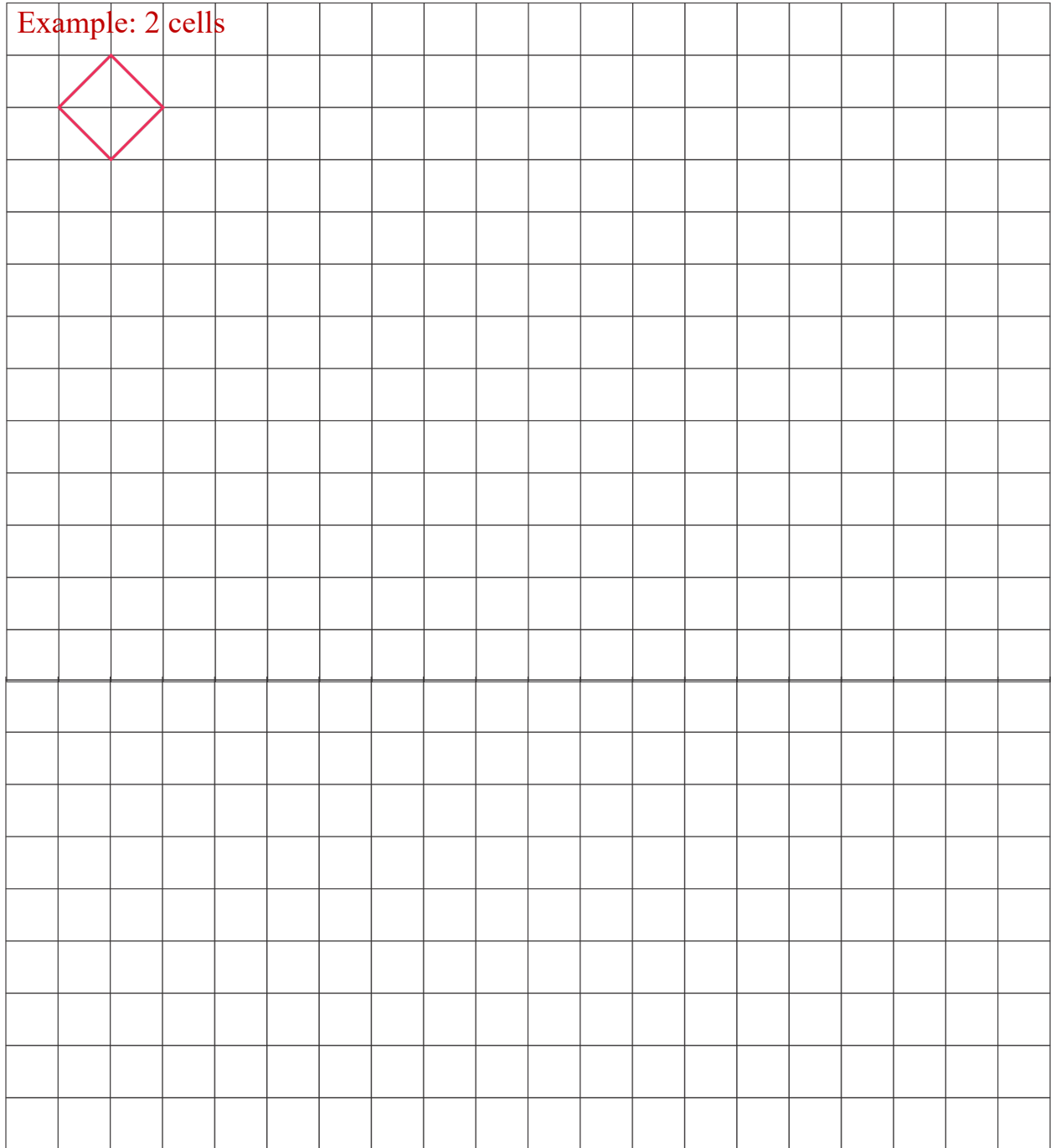
$\dfrac{1}{7} \quad \dfrac{1}{5}$; $\dfrac{2}{15} \quad \dfrac{2}{20}$; $\dfrac{1}{480} \quad \dfrac{1}{408}$; $\dfrac{1}{601} \quad \dfrac{1}{610}$

9. * On a graph paper draw a square with the area equal to 2 cells, 4 cells, 5, 8, 9, 10.

Example: 2 cells