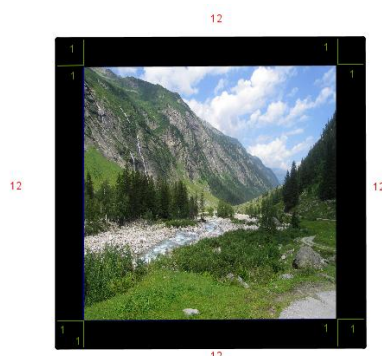


Student Activity: To investigate a frame on a picture

Use in connection with the interactive file, 'Rectangular Picture Frame', on the Student's CD.



1) Gary has a framed square picture, where each outer edge of the frame measures 12 cm as above.

a. What area of wall surface does this framed picture cover?

b. If the frame on this picture is 1 cm wide all around,

i. What is the width and length of the actual picture inside the frame?

ii. What is the area of the picture?

c. What is the area of the black frame around this picture?

d. What wall surface would be covered if we increased the frame to 2 cm around the picture as used in part **b** of this question?

e. What wall surface would be covered by the framed picture if we increased each side length of the actual picture inside the frame to 15 cm and kept the frame width as 1 cm?

2) Complete the following table:

| Length of the side of a square frame | Width of the frame | Length of side of the square picture inside the frame | Area of the picture inside the frame |
|--------------------------------------|--------------------|-------------------------------------------------------|--------------------------------------|
| 10 | 1 | | |
| 10 | 2 | | |
| 10 | 3 | | |
| 10 | 4 | | |

a) Why is it not possible to frame a square picture inside a square frame of side length 10 and have a frame of width 5 cm?

b) If x is the length of the side of the square frame and y is the width of the frame surrounding a picture inside the frame, what is the area of the picture?

3) What area of wall would a picture of length 30 cm and width 20 cm cover if it is enclosed by a frame of uniform width 5 cm?

4) A gardener has a square garden of area 144m^2 and decides to put a path of uniform width of 1m around the edge of the garden and leave the rest as a lawn. Find the area of the lawn.

5) A hotel decides to put a swimming pool in one of its rooms. The length of the room is 28m and the width is 25m. The pool will need a path of 2m surrounding it at all times.

a) Find the area of the biggest possible pool.

- b) Find the area of the path and the cost of the path if it costs €50 per m^2 to insert.

- c) What will the perimeter of the pool be?

- 6) A room has width 4m, length 5m and height 3m. The owner decides that he is going to add insulation material of depth 10 cm to each wall.

- a) What will the new area of the floor of the room be?

- b) How much floor space will the owner lose?

- c) What will the new area of each wall of the room be?

- d) What will the new volume of the room be?

- e) How much space (volume) will the owner have lost?

- 7) A farmer has a vegetable plot of length 5m and width 6m in a field and decides to increase the plot in size by adding a length of 1m to each side. What will the new area of his plot be and by what percentage will the area of his garden have increased?
