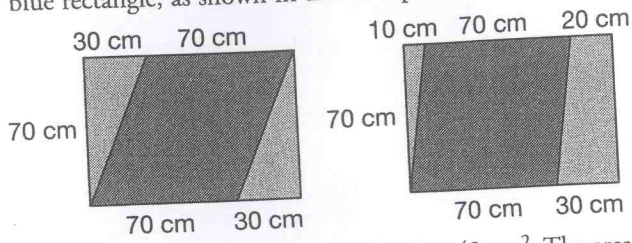
Chapter 8 Problem Bank

Answers

1. 2 m = 200 cm; $200 \times 200 = 40\,000$ cm^2; 2 cm × 2 cm = 4 cm^2; $40\,000 \div 4 = 10\,000$ squares

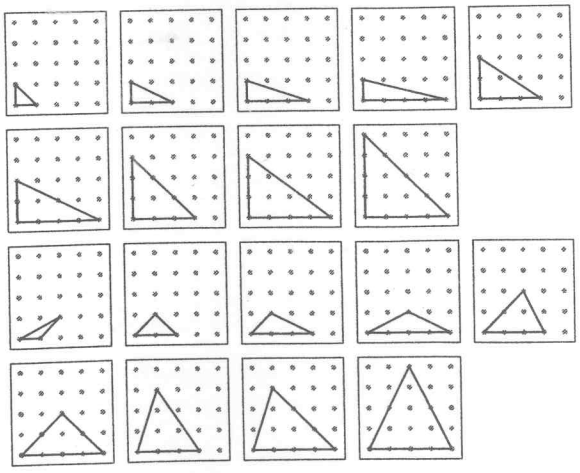
2. 0.2 km = 200 m; $200 \times 200 = 40\,000$ m^2; $40\,000 \div 50 = 800$ plots

3. The total area of the flag is 70 cm × (10 + 70 + 30) 100 cm = 7000 cm^2. The colour red covers 70 × (10 + 20) 30 = 2100 cm^2. The colour blue covers 70 × 70 = 4900 cm^2. I could redesign the flag with a blue parallelogram by shifting the top or bottom edge of the blue rectangle to either the left or right and redesigning the red areas. I could also shift both the top and bottom edges of the blue rectangle, as shown in the examples.



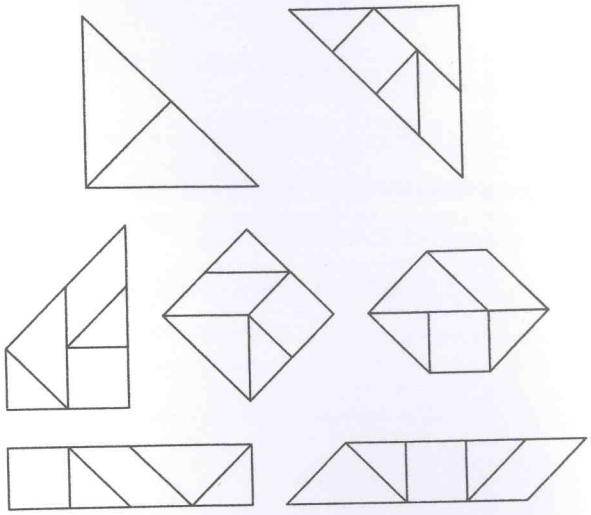
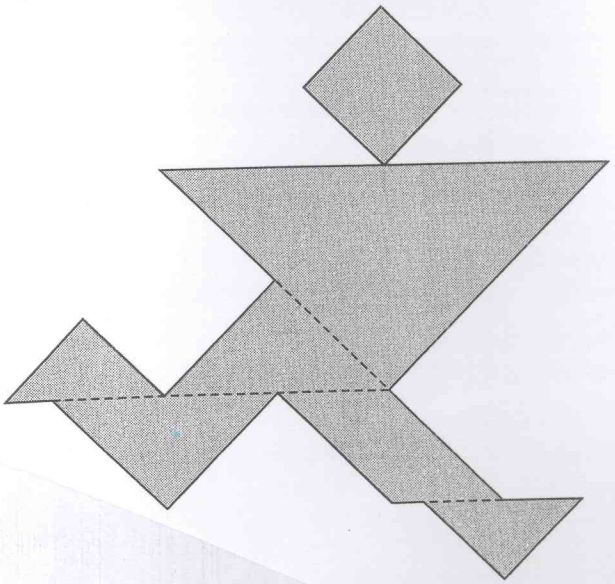
4. The area of the flap is $14 \times 6 = 84 \div 2 = 42$ cm^2. The area of each envelope is, therefore, $12 \times 14 = 168 \times 2 = 336 + 42 = 378$ cm^2. For 20 envelopes, Lydia will need $20 \times 378 = 7560$ cm^2 of paper.

5. Nine right triangles and nine non-right triangles with the same area, as shown



6. For example, 4 cards on 70 pages, 7 cards on 40 pages, 8 cards on 35 pages, or 10 cards on 28 pages

7. Note: The areas of the tangram pieces may vary depending on their source. The following answers are based on the Manipulatives Substitute tangram set, which measures 10 cm by 10 cm when assembled into a large square: large triangle, 25 cm^2; medium triangle, 12.5 cm^2; small triangle, 6.25 cm^2; square, 12.5 cm^2; parallelogram, 12.5 cm^2. Examples of shapes having $\frac{1}{2}$ the area of the complete tangram are shown below:



8. Using the areas given for the tangram set in 7 above, and dividing the puzzle as shown, it consists of the following: 1 square, 12.5 cm^2; 1 large triangle, 25 cm^2; 2 medium triangles, 25 cm^2; 2 small triangles, 12.5 cm^2; and 1 parallelogram, 12.5 cm^2 for a total of 87.5 cm^2.