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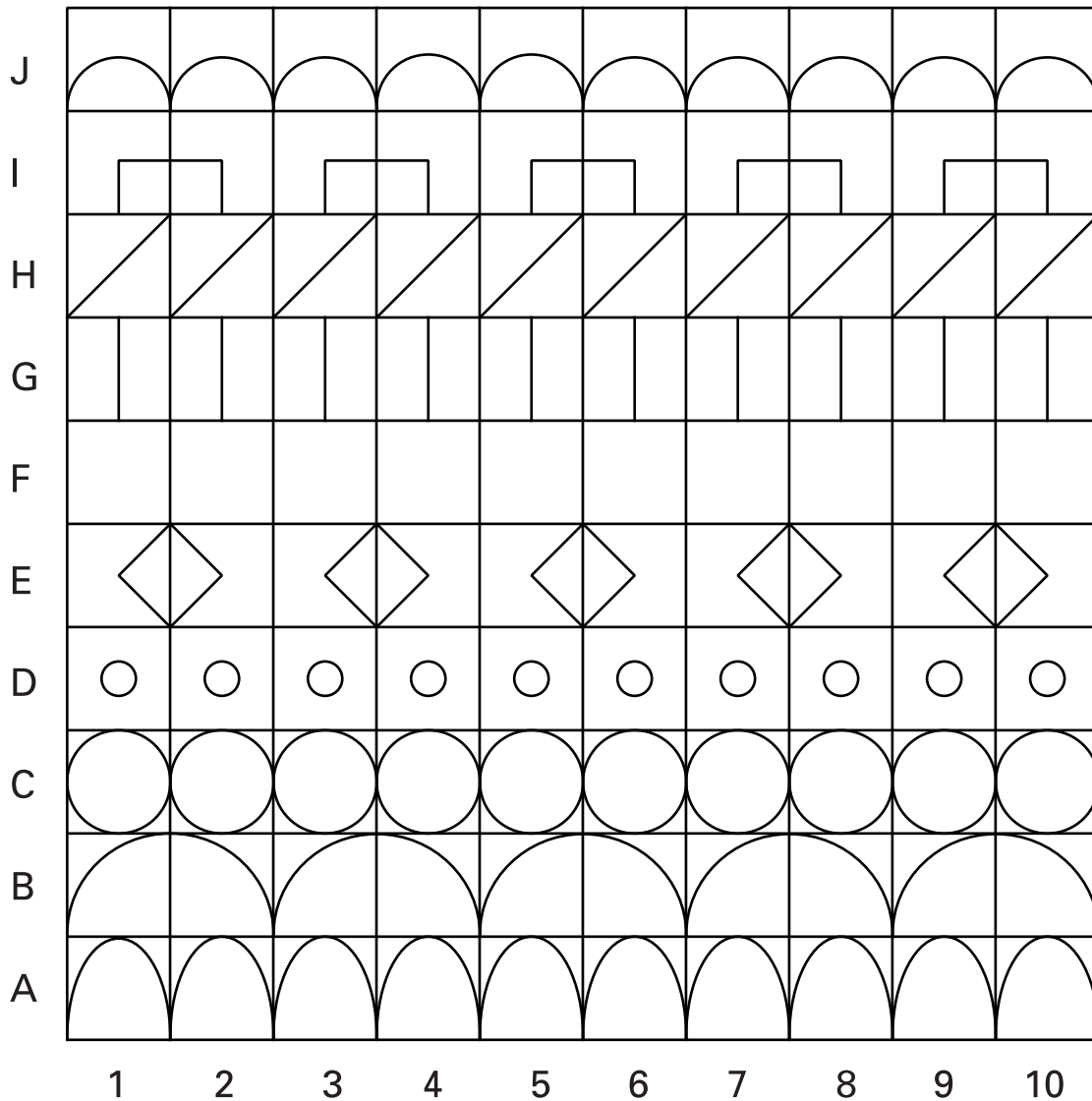
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Tile Template #2

Directions for Creating Paper Tiles

1. Duplicate this template on several sheets of paper.
2. Color in the tiles according to the activity requirements, after you have copied the template.
3. Optional: Laminate the copies before cutting the tiles if you plan to store and reuse them.
4. Cut out the tiles with a paper cutter or scissors.

Note: The special design tiles on this template are for specific activities, as noted in some Lesson Plan Materials Checklists.



Comparisons

Learning Outcomes

Students find, create, and describe patterns.

- The search for patterns is fundamental to mathematics at all grade levels.
- Patterns help children see order and make sense of the underlying structures of things, situations, and experiences.
- Patterns help children make predictions.

Students measure geometric figures and visualize and represent shapes. This work leads to generalizations such as formulas for area and perimeter.

Materials Checklist

Comparisons Worksheet, paper tiles (Tile Template #1) and paste, or colored pencils

Student Grouping

Individuals, pairs, or small groups

Time

30 to 45 minutes

Activity

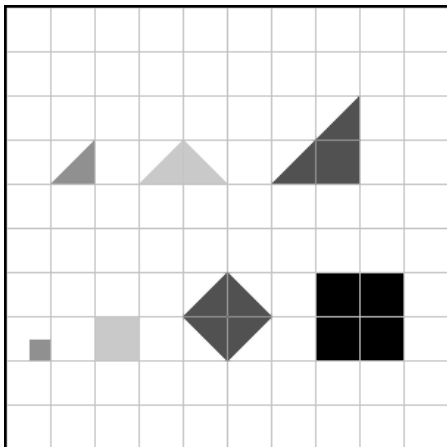
Students

- make a triangle on the grid, using paper tiles or colored pencils;
- make a triangle twice as big and four times as big as the original; and
- do the same with a square.

Extension Idea

Continue activity using other shapes.

Example



Figuring Areas

Learning Outcomes

Students measure the area of geometric figures through informal non-standard units of measurement. This work will lead to generalizations such as formulas for area and perimeter.

Materials Checklist

Figuring Areas Worksheets #1 and #2, paper tiles (Tile Template #1), colored pencils

Student Grouping

Individuals, pairs, or small groups.

Time

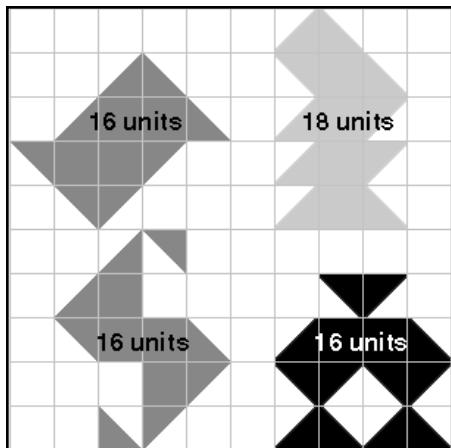
45 to 90 minutes.

Activity

Students will

- color the shapes outlined on the grid on Worksheet #1.
- cut a small triangle half the size of one of the grid squares.
- find the area of each figure using the triangle as one unit.
- discover which figures have the same area.
- make their own figures on the grid on Worksheet #2.
- measure the figures, using as one unit, a square paper tile, or a triangle or rectangle created by cutting one paper tile in half.
- compare the areas of the figures to discover the largest and smallest, and find any equal areas.

Worksheet #1 Solution



Figuring Areas #1

Name _____ Date _____

Directions

1. Color in the four shapes outlined on the grid below.
2. Cut a square paper tile in half to make two triangles.
3. Measure the area of each figure using the triangle as one unit.
4. Circle the figures that have the same area.

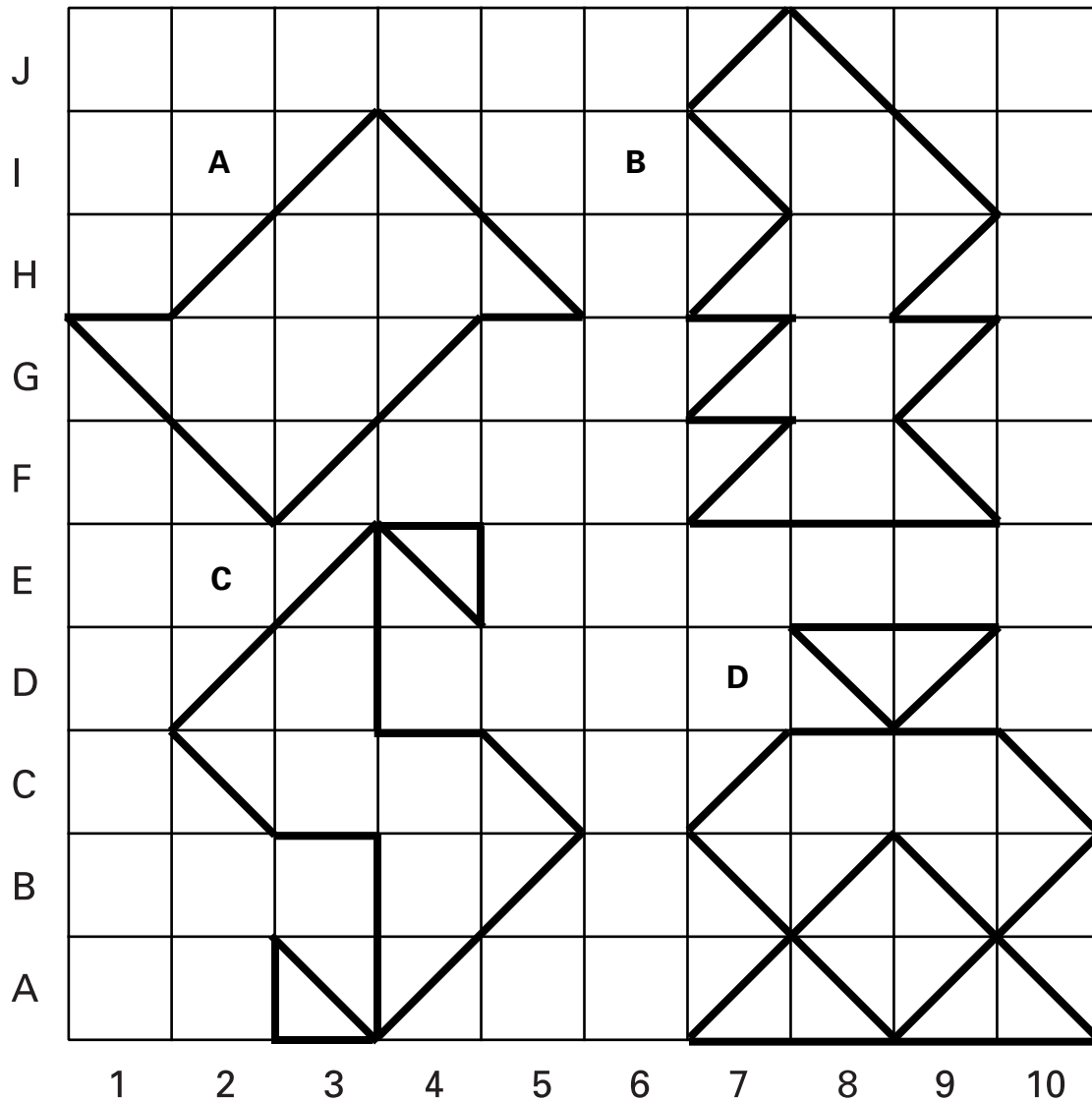
Area:

Figure A _____

Figure B _____

Figure C _____

Figure D _____



Pentominos

Learning Outcomes

Students find, create, and describe patterns.

- The search for patterns is fundamental to mathematics at all grade levels.
- Patterns help children see order and make sense of the underlying structures of things, situations, and experiences.
- Patterns help children make predictions.

Materials Checklist

Pentominos Worksheet, paper tiles (Tile Template #1), colored paper, colored pencils, scissors

Student Grouping

Individuals, pairs, or small groups.

Time

45 to 90 minutes

Activity

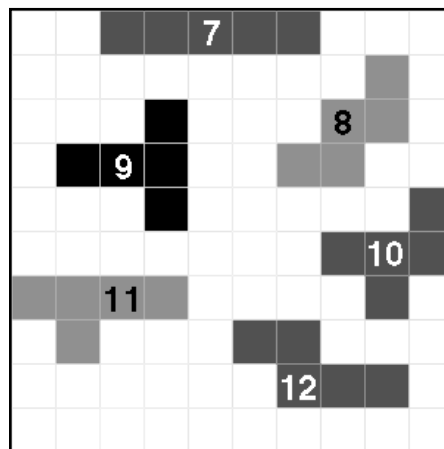
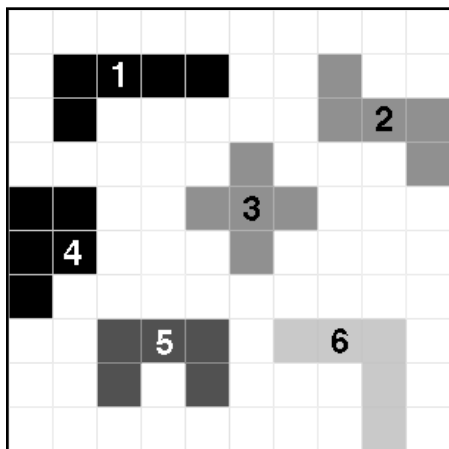
Students should:

- arrange groups of 5 square tiles of the same color with whole edges touching, in as many ways as possible. Each group is a pentomino. There should be 12 in all.
- trace each pentomino on colored paper and cut it out.
- fit several pentomino cutouts together to make a new larger pattern.
- trace the new large shape on the worksheet grid and then remove the pentomino cutouts
- give the outline to another student, with the set of pentominos needed to create it.
This student tries to arrange the set of pentomino cutouts to fit the outline.

Extension Ideas

Vary the number of tiles used. There are 12 and only 12 pentominos in the world. How many groups can be made with 4 squares? how many with 3 squares?

12 Pentominos



Pentominos

Name _____ Date _____

Directions

1. In as many different ways as possible, arrange groups of 5 square tiles of the same color so that whole edges touch. Each group is called a pentomino.
2. Outline each pentomino on colored paper and cut it out.
3. Fit several pentomino cutouts together to make a new larger pattern.
4. Trace an outline of the large shape on the grid below, and then remove the pentomino cutouts.
5. Give the outline and the set of pentominos you used to create the outline to another student, or group. They should be able to fit the cutouts into your outline.

