4.50 - Questions Handout #s 4, 6 & 8 - 13

Check Your Understanding

Practise
For help with questions 4 and 5, refer to Example 1.

4. Square tables are arranged in rows for a parent-night presentation. Each side of a square table seats two people.

a) Draw a diagram to show how many people can sit at a row of four tables.
b) Describe a pattern for the number of people sitting at a row of $n$ tables.
c) Use an equation to model your pattern.

5. James is helping grade 5 students arrange tables for reading groups. The school has trapezoid tables, which seat five people.

a) Describe a pattern relating the number of students that can sit at a row of $n$ tables.
b) Use a table to organize your pattern.
c) Write a formula to model your pattern.
d) Use your formula to find how many students can sit at a row of seven tables.
e) Describe one way to check your answer. Check your answer. If it is not correct, revise your formula.

For help with questions 6 and 7, refer to Example 2.

6. You are planning a badminton tournament. A player who wins a match plays against another winner in the next round. A player who loses a match is eliminated.

a) How many badminton players can enter a tournament that takes four rounds to find the overall winner?
b) How many players can enter a tournament that takes $n$ rounds?

7. Sari organizes a spelling competition. There are five rounds. At each round, half the students are eliminated. The final round has three competitors.

a) Organize the data using a tree diagram or a table.
b) How many students can enter the spelling competition?

Apply

8. Study the exposed smiley face cubes.

Diagram 1

Diagram 2

Diagram 3

a) Develop a formula to model the pattern.
b) What method did you use to find your formula? Justify your method.

9. A pattern is made of centimetre squares.

a) By how much does the perimeter of the shape increase with each new L-shape?
b) Describe the relationship between the perimeter of the shape and the number of L-shapes.
c) Find the perimeter of a shape that uses 12 L-shapes.
Chapter Problem

10. Start to fold a piece of paper into a fan. After each fold, open the paper and record the number of creases and sections.

a) How is the number of sections related to the number of creases?
b) Develop an equation to model the relationship.
c) What do your variables represent?
d) Justify the method you used for your investigation.
e) If your fan has 16 sections, how many creases will it have? Explain.

11. a) Find the length of the hypotenuse of each right triangle.

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b) How are the triangles related? Identify the pattern and extend it to show one more triangle.
c) Create a similar pattern beginning with this triangle. Show the next two triangles.

12. Fernanda read about a cool Web site in her science book. She e-mails three friends to tell them about the site. Each of her friends e-mails three other friends and so on. How many levels of e-mails are needed to tell 1000 people?

13. Look at the Olympic symbol.

a) Describe the relationship between the number of circles and the number of intersection points. How can the pattern be extended?
b) If the pattern is extended to a total of 100 circles, how many points of intersection will there be?
c) Create your own patterning problem. Ask a classmate to model your pattern using an equation.

Extend

14. Dr. Fournier wants to hire a student to walk dogs for her veterinary clinic. Two students apply for the job. Chandra charges $5 per dog. Sylvie charges $10 for the first dog and $3 for each additional dog.

a) How much does each student charge to walk one dog? two dogs?
b) Who should Dr. Fournier hire to walk the dogs? Why? Will Dr. Fournier change her mind depending on the number of dogs at the clinic? Explain.