1. Write each number in expanded form and in scientific notation.
   a) 335
   b) 6272
   c) 24242

2. Solve each equation.
   a) \( \frac{x}{1001} + 4 = 11 \)
   b) \( \frac{x}{1002} - 4 = 9 \)
   c) \( 4 + x = 7 + 9 \)
   d) \( 23 - 7 = x + 6 \)

3. a) The longest snake is the reticulated python. The record length for this python is 985 cm. Which scale would you use to draw this snake in your notebook? Justify your choice.
   i) 1:2
   ii) 1:50
   iii) 1:100
   iv) 1:1000
   b) Use the scale you chose in part a. Draw a line segment to represent a scale drawing of the snake. Is the scale you chose reasonable? Explain.

4. About 96% of the students at Westlake Middle School take at least one course from drama, music, or art. One thousand one hundred fifty-two students take at least one of these courses. How many students attend the school?

5. A rectangular sheet of cardboard is used to make a box. The cardboard is cut to make an open box with a base that measures 5 cm by 4 cm. The volume of the box is 60 cm\(^3\). Find the original area of the cardboard.

6. Use the fact that \( \frac{1}{4} = 0.25 \) to write each number as a decimal.
   a) \( \frac{1}{2} \)
   b) \( \frac{3}{4} \)
   c) \( \frac{1}{2} \)
   d) \( \frac{3}{4} \)

7. a) Find the number of hours in each fraction of a day.
   i) \( \frac{2}{3} \)
   ii) \( \frac{5}{6} \)
   iii) \( \frac{3}{4} \)
   iv) \( \frac{3}{8} \)
   b) Write each time in minutes as a fraction of an hour.
   i) 12 min
   ii) 20 min
   iii) 6 min
   iv) 136 min

8. The times, in minutes, that 14 students spent doing math homework over the weekend are: 27, 36, 48, 35, 8, 40, 41, 39, 74, 47, 44, 125, 37, 47
a) Organize the data in a stem-and-leaf plot.
b) Calculate the mean, median, and mode for the data.
c) What are the outliers?
   Calculate the mean without the outliers.
   What do you notice? Explain.
d) Which measure of central tendency best describes the data?
   Explain.

9. Census at School, Canada, surveyed elementary students in 2003
to find how much time they spent travelling to school.
The results are shown in the table.

<table>
<thead>
<tr>
<th>Number of Minutes</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–10</td>
<td>3531</td>
</tr>
<tr>
<td>11–20</td>
<td>2129</td>
</tr>
<tr>
<td>21–30</td>
<td>994</td>
</tr>
<tr>
<td>31–40</td>
<td>292</td>
</tr>
<tr>
<td>41–50</td>
<td>433</td>
</tr>
<tr>
<td>51–60</td>
<td>193</td>
</tr>
<tr>
<td>More than 60</td>
<td>111</td>
</tr>
</tbody>
</table>

a) Use a circle graph to display these data.
b) You will go to high school next year. Suppose the high school has
   an enrolment of 1200 students.
   How many students would you expect to take more than 30 min
   to get to school?
   What assumptions did you make?

10. a) Draw a circle with radius 12 cm.
    Calculate its circumference and area.
b) Draw a circle with diameter 6 cm.
    Calculate its circumference and area.
c) How are the circumferences in parts a and b related? Explain.
d) How are the areas in parts a and b related? Explain.

11. A can of tuna has height 3.5 cm and diameter 8.5 cm.
    a) Calculate the volume of the can.
b) The label covers the curved surface of the can.
    Calculate the area of the label.

12. Find the measure of each angle labelled a, b, c.
    Explain your reasoning.

13. a) Draw a large triangle. Construct the perpendicular bisector of
     each side. Use this construction to draw a circle through the
     vertices of the triangle.
b) Explain why you can use this method to draw a circle through
     3 points that are not on a line.
14. Use your knowledge of constructing a 60° angle and a 45° angle to construct a 105° angle.

15. Find each length indicated. Sketch and label the figure first.
   a) 
   b) 

16. Evaluate.
   a) \((+7) + (-12)\)
   b) \((-2) - (-12)\)
   c) \((-4) - (+13)\)
   d) \((-21) + (+16)\)
   e) \((+16) + (-9)\)
   f) \((-1) - (-9)\)
   g) \((-11) - (+11)\)
   h) \((+14) + (-18)\)

17. Evaluate.
   a) \((+3)(-8)\)
   b) \((+28) \div (-4)\)
   c) \((-5)(-6)(+7)\)
   d) \((-56) \div (-8)\)

18. Evaluate.
   a) \((-3)[(+5) - (-3)]\)
   b) \([(+8) \div (-4)] - (+10)(+3)\)
   c) \([(-6)(-8)] \div [(-10) \div (+5)]\)

19. Draw and label a coordinate grid. Where on this grid are all points with:
   a) first coordinate negative?
   b) second coordinate positive?
   c) first coordinate zero?
   d) second coordinate \(-1\)?
   e) equal coordinates?

20. Draw a triangle on a coordinate grid. Draw and label each image:
   a) Translate the triangle 3 units left and 5 units down.
   b) Reflect the triangle in the x-axis.
   c) Rotate the triangle 90° clockwise above the origin.
21. For each number pattern below:
   i) Describe the pattern.
      Write the pattern rule.
   ii) Use a table to find the
      11th term.
   iii) Write an expression for the
      \(n\)th term.
   iv) Use the expression to find
      the 70th term.
   a) 3, 5, 7, 9, 11, …
   b) 5, 8, 11, 14, 17, …
   c) 7, 11, 15, 19, 23, …
   d) 9, 14, 19, 24, 29, …

22. Four times the side length of an equilateral triangle is 9 cm longer than the side length.

Let \(s\) centimetres represent the side length of the triangle.
An equation for the side length is:
\[4s = s + 9\]

a) Use algebra tiles to solve the equation.
   What is the side length of the equilateral triangle?

b) Verify the solution.

c) What is the perimeter of the triangle?

23. A spinner has 3 congruent sectors labelled D, E, and F.
    A bag contains 3 linking cubes: 2 green and 1 red.
The pointer is spun and a cube is picked at random.
   a) Use a tree diagram to list the possible outcomes.
   b) What is the probability of:
      i) spinning E?
      ii) picking a green cube?
      iii) spinning E and picking a green cube?
      iv) spinning D and picking a red cube?

24. Conduct the experiment in question 23.
   a) Record the results for 10 trials.
      i) State the experimental probability for each event in question 23, part b.
      ii) How do the experimental and theoretical probabilities compare?
   b) Combine your results with those of 9 other students. You now have the results of 100 trials.
      Repeat part a, parts i and ii.
   c) What happens to the experimental and theoretical probabilities of an event when the experiment is repeated hundreds of times?