






















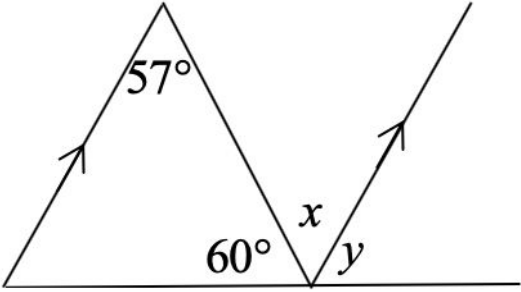



Self-Assessment for Grade 9 Applied Math (MFM1P)

Students who are registered for Grade 9 Applied Math (MFM1P) may benefit from a self evaluation and review of the following expectations from Grade 8 Math.

The questions in this self-assessment reflect some of the key ideas learned in prerequisite courses. They do not represent the problem solving approach or the rich experience that students would be exposed to in a classroom. The intention is for students to revisit some key concepts and, if needed, access review materials in an informal environment at a pace that is comfortable for the student.

Concept(s)	Sample Question	How comfortable do you feel with this concept?	Link(s) to explore concept further
I can express repeated multiplication using exponential notation	1. Write as a single power $7 \times 7 \times 7 \times 7 \times 7$	 <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable	Exponents
I can order rational numbers	2. Write the following numbers in order from least to greatest: a) $\frac{7}{4}$ $1\frac{1}{4}$ $\frac{7}{8}$ $\frac{3}{2}$ b) 3.5 3.25 -5.7 -5.07	 <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable	Comparing Rational Numbers





<p>I can convert between fractions, decimals and percents</p>	<p>3. Complete the chart</p> <table border="1" data-bbox="421 159 1238 624"> <thead> <tr> <th>Fraction</th> <th>Decimal</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>$\frac{3}{5}$</td> <td></td> <td></td> </tr> <tr> <td></td> <td>0.85</td> <td></td> </tr> <tr> <td></td> <td></td> <td>20%</td> </tr> </tbody> </table>	Fraction	Decimal	Percent	$\frac{3}{5}$				0.85				20%	 <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable	<p>Describing Fractions as Decimals</p>
Fraction	Decimal	Percent													
$\frac{3}{5}$															
	0.85														
		20%													
<p>I can use prime numbers to help determine common factors</p> <p>I can use prime numbers to help determine common multiples</p>	<p>4. For the numbers 18 and 24, find:</p> <p>a) the greatest common factor</p> <p>b) the least common multiple</p>	 <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable	<p>Greatest Common Factor</p> <p>Least Common Multiple</p>												
<p>I can solve problems from real life contexts with decimal numbers</p>	<p>5. On Thursday, a YouTube video had 4.17 thousand views. On the following Tuesday, the same video had 6 times as many views. How many views, in thousands, did it have on the Tuesday?</p>	 <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable	<p>Multiplying Decimals</p>												

<p>I can solve problems involving simple fractions</p>	<p>6. A tank of gas is $\frac{3}{4}$ full. A drive to work and back home uses $\frac{1}{8}$ of a tank. If a person drives to work in the morning and back home in the evening, how many days will the gas last?</p>	<p>  <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable </p>	<p>Dividing Fractions</p>
<p>I can solve problems involving the volume of cylinders using a variety of strategies</p>	<p>7. A short cylindrical can has a radius of 10 cm and a height of 5 cm. A tall cylindrical can has a radius of 5 cm and a height of 10 cm. Which can has a greater volume? How much greater?</p>	<p>  <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable </p>	<p>Volume and Capacity of a Cylinder</p>
<p>I can solve angle relationship problems involving triangles, intersecting lines, parallel lines and transversals</p>	<p>8. Find the two unknown angles.</p> 	<p>  <input type="checkbox"/> Very comfortable  <input type="checkbox"/> Somewhat comfortable  <input type="checkbox"/> Not at all comfortable </p>	<p> Angles and Intersecting Lines Parallel Lines and Transversals </p>

I can model linear relationships using tables of values, graphs and equations

I can determine a term, given its term number in a linear pattern that is represented by a graph or an algebraic equation

9. Consider the following pattern.
- Describe the pattern between the Number of Circles and the Image Number
 - Complete the table
 - Graph the Number of Circles vs. the Image Number
 - Write an equation that represents the relationship between the Number of Circles (C) and the Image Number (n)
 - Determine the number of circles in image 43

Image	Number of Circles
 1	
 2	
 3	
 4	



Very comfortable



Somewhat comfortable



Not at all comfortable

[Patterns in Sequences](#)

[The General Term](#)

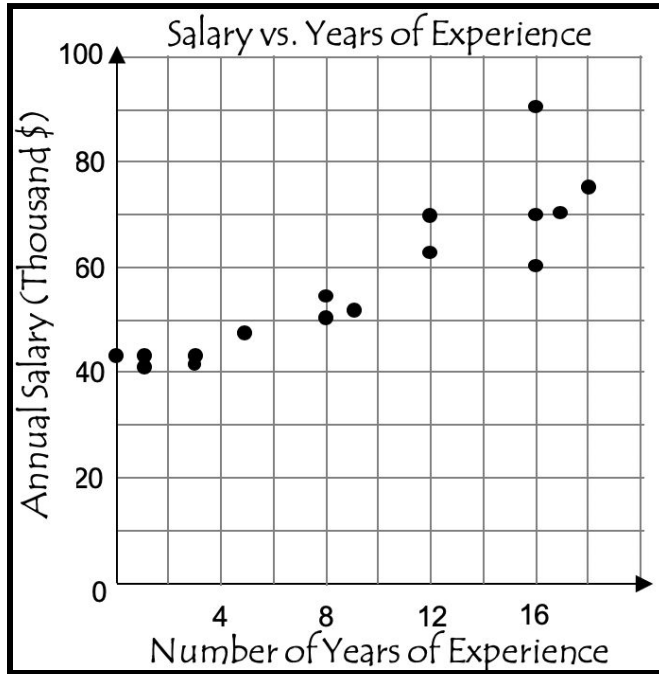
[Variables](#)

[Graphing Patterns](#)

[Bringing it All Together](#)

I can identify if there is a relationship within the data of a scatter plot

10. Consider the following graph.



- What type of graph is this?
- Why is this type of graph useful for this data?
- Does the graph suggest a relationship between the Annual Salary and the Number of Years of Experience? How do you know?



Very comfortable



Somewhat comfortable



Not at all comfortable

[Scatter Plots](#)

Solutions to Sample Questions

1. Write as a single power $7 \times 7 \times 7 \times 7 \times 7$

$$7 \times 7 \times 7 \times 7 \times 7 = 7^5$$

2. Write the following numbers in order from least to greatest:

a) $\frac{7}{4}$ $1\frac{1}{4}$ $\frac{7}{8}$ $\frac{3}{2}$

One way to write them in order is to start by writing all the fractions with the same denominator

$$\frac{14}{8} \quad \frac{10}{8} \quad \frac{7}{8} \quad \frac{12}{8}$$

We can now write this list in order from least to greatest

$$\frac{7}{8} \quad \frac{10}{8} \quad \frac{12}{8} \quad \frac{14}{8}$$

So the original list in order is

$$\frac{7}{8} \quad 1\frac{1}{4} \quad \frac{3}{2} \quad \frac{7}{4}$$

b) 3.5 3.25 - 5.7 - 5.07

- 5.7 is the same as - 5.70. **One way to represent - 5.70 is that you owe \$5 dollars and 70 cents. Since you are “richer” if you owe \$5.07 than if you owe \$5.70, - 5.07 is greater than - 5.70**

From least to greatest the order is:

$$- 5.7 \quad - 5.07 \quad 3.25 \quad 3.5$$

Complete the chart

Fraction	Decimal	Percent
$\frac{3}{5}$	0.6	60%
$\frac{85}{100}$ or $\frac{17}{20}$	0.85	85%
$\frac{20}{100}$ or $\frac{1}{5}$	0.2	20%

4. For the numbers 18 and 24, find:

- the greatest common factor
- the least common multiple

$$18 = 2 \times 3 \times 3$$

$$24 = 2 \times 2 \times 2 \times 3$$

$$GCF = 2 \times 3$$

$$= 6$$

$$LCM = 2 \times 3 \times 3 \times 2 \times 2$$

$$= 72$$

This means that the biggest number that divides into both 18 and 24 with no remainder is 6.

The smallest number that is a multiple of both 18 and 24 is 72. Another way to get the LCM is to look at the multiples of each number until you find the first common multiple.

18, 36, 54, **72**, 90, ...

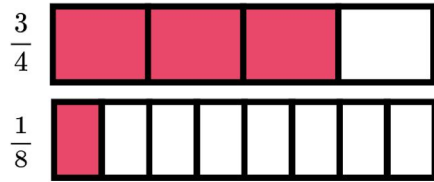
24, 48, **72**, 96, ...

5. On Thursday, a YouTube video had 4.17 thousand views. On the following Tuesday, the same video had 6 times as many views. How many views, in thousands, did it have on the Tuesday?

$$6 \times 4.17 = 25.02$$

So there were 25.02 thousand (or 25 020) views on Tuesday

6. A tank of gas is $\frac{3}{4}$ full. A drive to work and back home uses $\frac{1}{8}$ of a tank. If a person drives to work in the morning and back home in the evening, how many days will the gas last?



We can see that 6 of the $\frac{1}{8}$ pieces are needed to match the $\frac{3}{4}$ bar. So $\frac{3}{4} \div \frac{1}{8} = 6$

Since $\frac{3}{4} \div \frac{1}{8} = 6$, if the car is only used to drive to and from work then the gas should last 6 days

7. A short cylindrical can has a radius of 10 cm and a height of 5 cm. A tall cylindrical can has a radius of 5 cm and a height of 10 cm. Which can has a greater volume? How much greater?

$$V_{\text{cylinder}} = A_{\text{base}} \times h$$

$$= \pi r^2 h$$

$$V_{\text{short cylinder}} = \pi (10)^2 \times 5$$

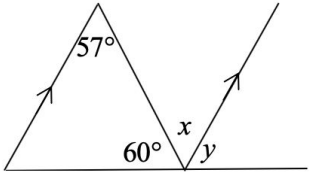
$$\doteq 1570.75 \text{ cm}^3$$

$$V_{\text{tall cylinder}} = \pi (5^2) \times 10$$

$$\doteq 785.38 \text{ cm}^3$$

The short cylinder has a greater volume. It is $1570.75 - 785.38 = 785.37 \text{ cm}^3$ greater in volume. It is double the volume of the tall cylinder.

8. Find the two unknown angles.



Since one side of the triangle is parallel to the ray as indicated in the picture, the 57° angle and angle x are alternate angles and are therefore equal. So angle x is 57° . Since the three angles 60° , x and y form a straight angle, their sum is 180° .

$$60 + x + y = 180$$

$$60 + 57 + y = 180$$

$$y = 180 - 60 - 57$$

$$y = 63$$

So y is 63° .

9. Consider the following pattern. (Chart is below)

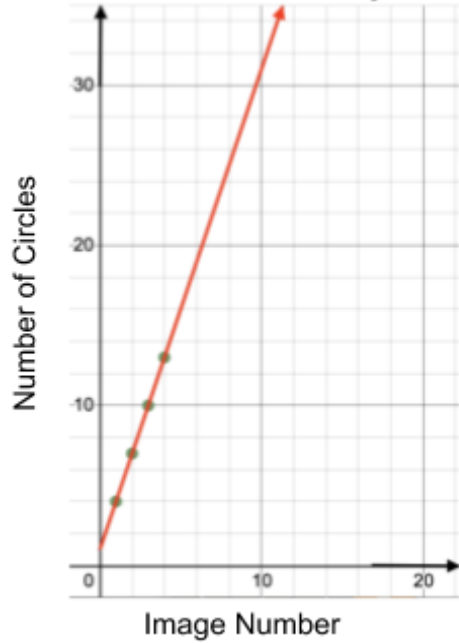
a) Describe the pattern between the Number of Circles and the Image Number

One way to see it is that In each stage, there is one circle on the left. Each time a square is added, three circles (one on top, one below and one to the right) are added. This means that the number of circles is $3 \times$ the image number plus 1.

b) Complete the table (See below)

c) Graph the Number of Circles vs. the Image Number

Number of Circles vs. Image Number



d) Write an equation that represents the relationship between the Number of Circles (C) and the Image Number (n)


$$C=1+3n$$

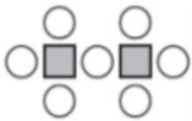


e) Determine the number of circles in image 43

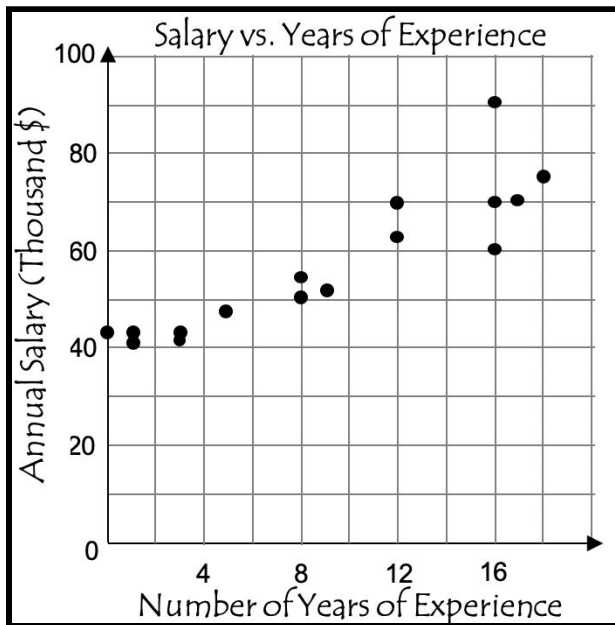
$$C=1+3(43)$$

$$C=130$$

There would be 130 circles in image 43.

Image	Number of Circles
 <p>1</p>	4

 <p>2</p>	7
 <p>3</p>	10
 <p>4</p>	13



13. Consider the following graph.

- What type of graph is this? **Scatter Plot**
- Why is this type of graph useful for this data? **Scatter plots are useful in determining if there is a relationship between two variables.**
- Does the graph suggest a relationship between the Annual Salary and the Number of Years of Experience? How do you know? **Yes, you can sketch in a line of best fit.**