

## IM1 Problem Set 31

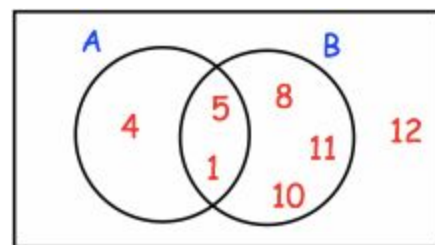
Task 1	Task 2	DC
Put solutions to problems from the previous Problem Set on the board	Discuss all problems and come to a consensus. Record solutions in your notebooks and present solutions.	DC

### Problem Set 31

<b>31.1</b>	<p>Given the following three points of a triangle: P(2,1), Q(5,7) and R(8,4). Use GEOGEBRA to</p> <ol style="list-style-type: none"> <li>graph the 3 points</li> <li>draw in all three line segments of the triangle;</li> <li>find the slope of each segment;</li> <li>find the length of each line segment.</li> <li>Determine what type of triangle this is.</li> </ol>
<b>31.2</b>	<ol style="list-style-type: none"> <li>Find the surface area of a circular cylinder whose volume is <math>1,256 \text{ cm}^3</math> and whose height is 16 cm. Use <math>\pi = 3.14</math>.</li> <li>A cylinder has a volume of <math>997 \text{ cm}^3</math> and a height of 2.2 cm. Find the curved surface area of this cylinder to the nearest square centimeter. Use <math>\pi = 3.14</math>.</li> </ol>
<b>31.3</b>	Use the substitution method to find the point where the lines $x + 2y = 10$ and $4x - y = -14$ intersect. Verify using your graphing calculator.
<b>31.4</b>	<p>Aisha's monthly cell-phone plan is as follows: phone calls cost her \$0.20/minute and text messages cost \$0.15/message. Her maximum budget is \$30 every month.</p> <ol style="list-style-type: none"> <li>What is the MAXIMUM number of text messages she can make per month?</li> <li>What is the MAXIMUM minutes of phone calls she can make per month?</li> <li>Can Aisha spend 30 minutes on phone calls and complete 100 text messages and stay within her budget?</li> <li>Write an equation that models the cost of Aisha's cell-phone charges.</li> </ol>

<p><b>31.5</b></p>	<p>The caterers for a banquet charge \$12 for a chicken dinner and \$8 for a pasta dinner. The total cost for 240 guests is \$2100.</p> <ol style="list-style-type: none"> <li>To model this problem, Mr S writes one equation to be <math>12x + 8y = 2100</math>. Explain why.</li> <li>To model this problem with a second equation, Mr S writes the second equation as <math>x + y = 240</math>. Explain why.</li> <li>Now that you have two equations, how many chicken dinners were ordered? How many pasta dinners were ordered?</li> </ol>
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<p><b>31.6</b></p>	<p>Here is a Venn diagram. A number is chosen at random.</p> <ol style="list-style-type: none"> <li>Write down <math>P(A \cap B)</math> - the probability that your number is in A <b>and</b> it is in B.</li> <li>Write down <math>P(A \cup B)</math> - the probability that your number is in A <b>or</b> it is in B</li> <li>Write down <math>P(A \cap B')</math> - the probability that your number is in A <b>and</b> it is not in B.</li> <li>Write down <math>P(A' \cup B')</math> - the probability that your number is not in A <b>or</b> it is not in B</li> </ol>
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<p><b>31.7</b></p>	<p>Write the equation of a line that goes through the point A(3, 6) and:</p> <ol style="list-style-type: none"> <li>is parallel to the line <math>y = -2x + 5</math></li> <li>is perpendicular to the line <math>y = \frac{3}{4}x - 2</math></li> </ol>
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<p><b>31.8</b></p>	<p>This scatter plot shows the monthly profit for a car dealership when a certain number of cars are sold.</p> <ol style="list-style-type: none"> <li>Use the graph to estimate the monthly profit when       <ol style="list-style-type: none"> <li>23 cars are sold,</li> <li>32 cars are sold.</li> </ol> </li> <li>Use the graph to estimate the number of cars that need to be sold in order to realize a profit of \$67,000.</li> <li>From the graph, determine two ordered pairs and hence determine the equation of this line of best fit, as drawn on the scatter plot.</li> <li>What does the slope represent?</li> </ol>
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