

## IM1 Problem Set 29

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 29

<b>29.1</b>	<p>Given the following three points of a triangle, A(1, 6) and B(7, 9) and C(4, 0). Use GEOGEBRA to</p> <ol style="list-style-type: none"> <li>a. graph the 3 points</li> <li>b. draw in all three line segments of the triangle;</li> <li>c. find the slope of each segment;</li> <li>d. find the length of each line segment.</li> <li>e. Determine what type of triangle this is.</li> </ol>												
<b>29.2</b>	<p>Rocco is designing cylindrical containers for a DT project. He has the following information about three different designs:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Cylinder #</th> <th>height</th> <th>radius</th> </tr> </thead> <tbody> <tr> <td>#1</td> <td><math>h = 9.95</math> cm</td> <td><math>r = 4</math> cm</td> </tr> <tr> <td>#2</td> <td><math>h = 4.42</math> cm</td> <td><math>r = 6</math> cm</td> </tr> <tr> <td>#3</td> <td><math>h = 2.49</math> cm</td> <td><math>r = 8</math> cm</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>a. Verify that the volume of all 3 cylinders is the same.</li> <li>b. Find the surface area of each cylinder.</li> <li>c. Which cylinder design do you think would be the most economical to produce? Why?</li> </ol>	Cylinder #	height	radius	#1	$h = 9.95$ cm	$r = 4$ cm	#2	$h = 4.42$ cm	$r = 6$ cm	#3	$h = 2.49$ cm	$r = 8$ cm
Cylinder #	height	radius											
#1	$h = 9.95$ cm	$r = 4$ cm											
#2	$h = 4.42$ cm	$r = 6$ cm											
#3	$h = 2.49$ cm	$r = 8$ cm											
<b>29.3</b>	<p>Use the substitution method to find the point where the lines <math>3x + 13y = 56</math> and <math>y = -2x + 27</math> intersect. Verify using GEOGEBRA and then your graphing calculator.</p>												
<b>29.4</b>	<p>Write the equation of a line that goes through the point A(6,-2) and:</p> <ol style="list-style-type: none"> <li>a. is parallel to the line <math>y = \frac{1}{2}x + 9</math></li> <li>b. is perpendicular to the line <math>y = 3x + 5</math></li> </ol> <p>Write each equation in slope-intercept form as well as standard form.</p>												

<p><b>29.5</b></p>	<p>A lake has been contaminated with a chemical spill from a factory near the shore of the lake. The current level of the chemical in the lake is 9 mg/L. The factory has started a clean-up program and is reducing the level of the chemical by 0.8 mg/L every year.</p> <ol style="list-style-type: none"> <li>At what levels would you expect the chemical after 3 years? After 6 year?</li> <li>Write an equation modeling the relationship between the level of the chemical and the years.</li> <li>What do the slope and y-intercept of your equation represent?</li> <li>In what year would you predict the chemical to be completely removed from the lake?</li> </ol>
<p><b>29.6</b></p>	<p>Samir wants to earn \$336 in order to pay for a ski trip to Lebanon. He has two part time jobs. On weekends, he works as a lifeguard and earns \$12/hr and on weekdays, he works as a math tutor and earns \$16 per hour.</p> <ol style="list-style-type: none"> <li>If he works 4 hours as a lifeguard, how many hours must he work tutoring to earn \$336?</li> <li>If he works 9 hours as a tutor, how many hours must he work lifeguarding to earn \$336?</li> <li>Mr. S. writes the equation <math>12x + 16y = 336</math> to model Samir's savings plan. What do the variables <math>x</math> and <math>y</math> represent?</li> <li>What is the MAXIMUM number of hours that Samir must work as a lifeguard to earn \$336?</li> <li>What is the MAXIMUM number of hours that Samir must work as a tutor to earn \$336?</li> <li>What would be the domain and range of this linear relation, given the context of Samir earning \$336?</li> </ol>
<p><b>29.7</b></p>	<p>Given the following partial sequences of numbers, determine what the pattern is and use your predicted pattern to find (i) the 10th term in each sequence and (ii) the preceding three terms,</p> <ol style="list-style-type: none"> <li>..., 2, 4, 8, 16, 32, .....</li> <li>..., 3, -6, 12, -24, 48, .....</li> <li>..., 12, 6, 3, 1.5, 0.75, .....</li> </ol>
<p><b>29.8</b></p>	<p>Niamh is playing darts. She throws two darts aiming for a Bullseye. The probability Niamh hits the Bullseye on her first throw is <math>\frac{1}{4}</math>. The probability she hits the Bullseye on her second throw <math>\frac{1}{3}</math>.</p> <ol style="list-style-type: none"> <li>Complete the tree diagram.</li> <li>Work out the probability Niamh hits the Bullseye at least once.</li> </ol> <div style="text-align: right;"> <p style="text-align: center;"> <span style="margin-right: 100px;">First throw</span> <span>Second throw</span> </p> </div>