

IM1 Problem Set 28

| 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 |

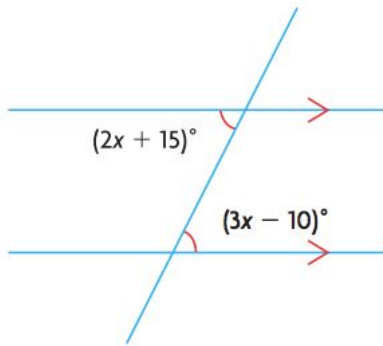
Problem Set 28

| | |
|-------------|---|
| 28.1 | <p>Given the following three points of a triangle, A(0, 4) and B(6, 7) and C(3, -2). Use GEOGEBRA to:</p> <ol style="list-style-type: none"> graph the 3 points and draw in all three line segments of the triangle; find the slope of each segment; find the length of each line segment. Hence, determine what type of triangle this is. |
| 28.2 | <p>A company is designing a new box to hold coffee. They have 3 designs, cuboids A, B and C. All 3 designs have the same volume of 600 cm^3. The company wants to choose the design with the smallest surface area. Which cuboid should they choose?</p> <div style="text-align: center;"> <p style="text-align: center;">Cuboid A: 4cm, 6cm, 25cm Cuboid B: 10cm, 6cm, 10cm Cuboid C: 2cm, 20cm, 15cm</p> </div> |
| 28.3 | Use algebraic methods to find the point at which the lines $y = -2x + 5$ and $2x - 3y = 17$ intersect. Use a graphing calculator to verify this intersection point. |
| 28.4 | <p>To sketch graphs of the following linear functions in standard form, we first find the x- and y-intercepts. Once we have the intercepts, we graph the intercepts and then the line.</p> <ol style="list-style-type: none"> Sketch a graph of the line $2x - 3y = 15$ by first finding the intercepts. Sketch a graph of the line $4x + 5y = 10$ by first finding the intercepts. |
| 28.5 | A catering company charges \$550 for 20 guests and \$775 for 35 guests. What is the cost of one guest? |

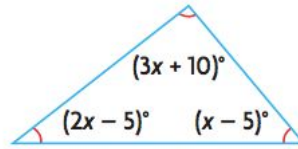
28.6

Determine the value of x in each of the following diagrams:

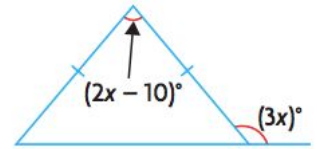
a)



b)



c)



28.7

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,

- a. ..., 2, 4, 8, 16, 32,
- b. ..., 3, -6, 12, -24, 48,
- c. ..., 12, 6, 3, 1.5, 0.75,

28.8

The table below shows the lengths of a sample of lake trout at various ages:

| | | | | | | | | | | | | |
|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Age (years) | 3 | 4 | 5 | 6 | 7 | 3 | 4 | 5 | 3 | 4 | 5 | 6 |
| Length (cm) | 28 | 34 | 40 | 42 | 48 | 30 | 34 | 40 | 28 | 34 | 36 | 37 |

- a. Which variable is the independent variable? Which is the dependent?
- b. Predict the relationship between the two variables.
- c. Plot the data on a scatter plot (use DESMOS as well as your graphing calculator)
- d. Determine the equation of the line that best fits the data.