

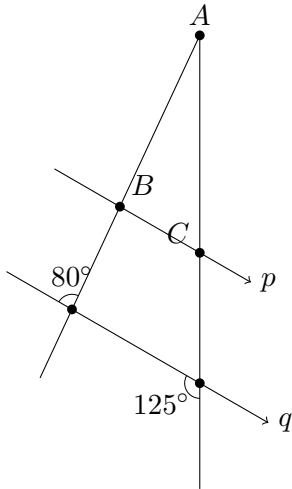
# Midterm Two

Show all your work

Name: \_\_\_\_\_  
 Number: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Score: \_\_\_/38

**Problem 1:** Lines  $p$  and  $q$  are parallel. Find the measures of INTERIOR angles in  $\triangle ABC$ :

$\angle A =$  ,  $\angle B =$  , and  $\angle C =$  .



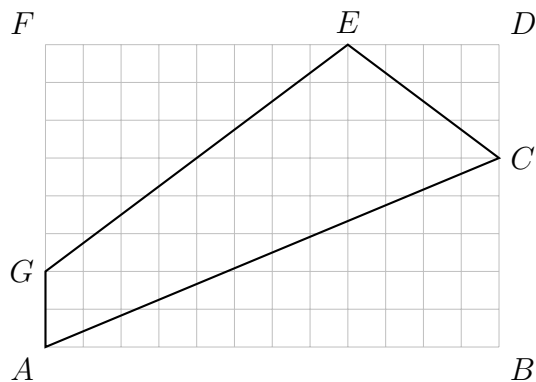
Score: /3

**Problem 2:** Set up a table to draw all rectangles with perimeter 14 cm whose dimensions are integral in centimetre(s). Of these rectangles, which one has the largest area?

\_\_\_\_\_  
 Rectangle:  
 Area:  
 \_\_\_\_\_

Score: /3

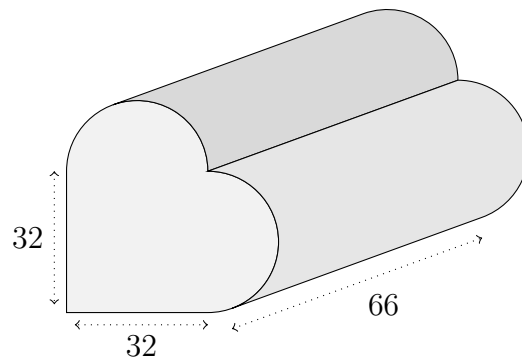
**Problem 3:** Find the PERIMETER of the quadrilateral  $ACEG$  enclosed in the given rectangle  $ABDF$ .



Score: /4

/10

**Problem 4:** Euclid put two half cylinders on a square prism to make a heart prism. Find its surface area.



Score: /3

**Problem 5:** Janette purchased a new pair of winter boots and paid \$224 at the cashier. Using BC's tax rate of 12%, calculate the ticket price on the boots before taxes.

Score: /3

**Problem 6:** How much would David's grandparents need to put in a GIC earning 3.75% to have a million dollars in 25 years? Use simple interest.

Score: /3

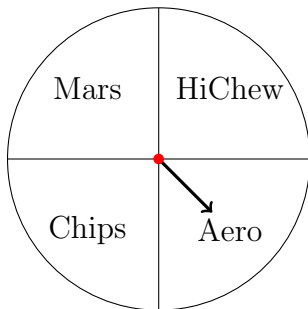
**Problem 7:** Brian's friend, Jay, graduated from university with a student loan of \$12 000 at 4% to be paid off in 3 years. Compute the monthly instalment payment.

Score: /3

**Problem 8:** If *Capilano Express* credit card charges 21.5% on unpaid balance, how much would it cost in finance charge to leave \$290 unpaid past the due date for 90 days?

Score: /2

**Problem 9:** Dad constructed a spinner with four equal sectors. Draw a sample space for spinning the spinner twice. Find the probability of getting an Aero and a Mars bar (in any order) after two spins.



Score: /3

**Problem 10:** Ham and Sam selected the streaming services monthly for Hamlet and Samlette depending on the shows they wanted their children to watch. The following table shows the result of a survey according to age group and the number of streaming services used on average per month. Given that a participant is selected from the 46–60 age group, what is the probability that the participant is paying for 2 streaming services?

Age	Streaming services			
	1	2	3	4+
16–30	280	435	205	78
31–45	380	129	198	54
46–60	223	552	352	452
61+	121	673	236	22

Score: /3

**Problem 11:** Samlette liked puzzles. Ham showed her a puzzle of a sample space  $S$  as a rectangle containing two events  $A$  and  $B$ . Samlette knew that  $P(S) = 100\%$ ,  $P(A) = 80\%$ , and  $P(B) = 60\%$ , with their overlap,  $P(A \cap B) = 50\%$ . Help Samlette find the following probabilities through the help of a Venn diagram.

- a. Draw a Venn diagram prescribed by the probabilities given.
- b. Find  $P(A \cup B)$ .
- c. Find  $P(\overline{A \cup B})$ .
- d. Find  $P(B | A)$ .

Score: /4

**Problem 12:** No test is perfect. The fecal immunochemical test (FIT) is not 100% accurate, i.e. it may miss some colon cancer. Suppose 12% of those taking FIT gets abnormal results, of those, 3% has colon cancer while of those with normal FIT results, 0.1% has cancer. Starting with a FIT branching to Normal and Abnormal results first, then cancer or no cancer second, draw a probability tree for the FIT, then find the probability that given a patient without colon cancer, the patient gets a false positive for FIT.

Score: /4