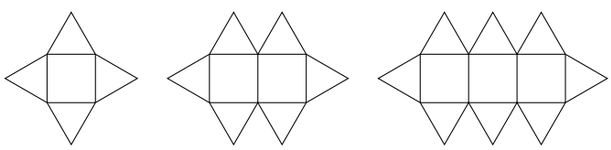
Math 123-01
Summer 2025
Dr. Lily Yen

Midterm I

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ___/30

Problem 1: Using matchsticks, we create shapes in the following pattern. From the left, we see the first, the second, and the third.



a. Draw the 4th and the 5th shapes.

b. Draw a table of values showing a pattern for the number of matchsticks used in the first four shapes?

c. How many matchsticks are in the nth shape? Express your formula in terms of n.

Score: /5

Problem 2: Anjali goes on a trip and packs 3 different tops, 4 different skirts, and 5 different pairs of shoes. How many different outfits can Anjali wear on this trip by choosing one top, one skirt, and one pair of shoes? ;

Score: /2

Problem 3: Yuja has 19 coins in her wallet which are either nickels (5-cent coins) or quarters (25-cent coins). She has a total of $3.35 worth of coins in her wallet. How many nickels does Yuja have?

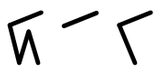
Score: /3

/10

Problem 4: Convert each of the following into Hindu-Arabic numeral base-10.

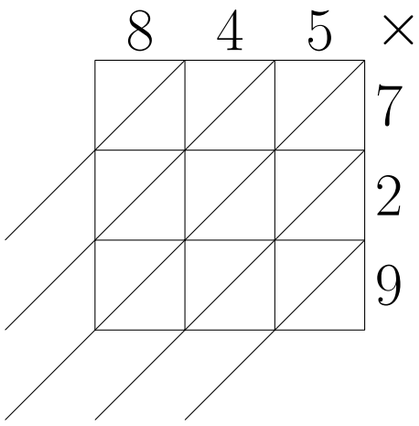
a. 11101001_2

b. 

c. 

Score: /5

Problem 5: Multiply 845×729 using the galley method.



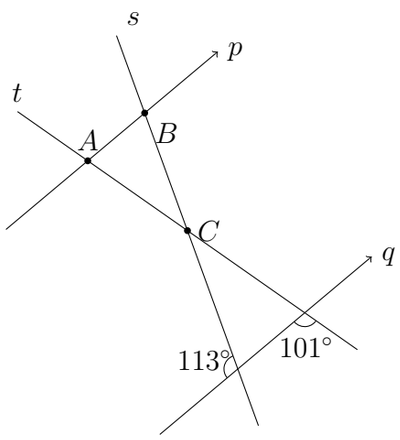
Score: /2

Problem 6: We know that we have between 150 and 200 books in our STEM library. If we organize the books in groups of 7s, there are 2 left over; in groups of 6s, 4 books left over. How many books do we have?

Score: /3

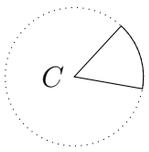
/10

Problem 7: Lines p and q are parallel. Lines s and t are transversals. Find the measures of INTERIOR ANGLES in $\triangle ABC$: $\angle BAC =$ $\square$, $\angle ABC =$ $\square$, and $\angle ACB =$ $\square$.



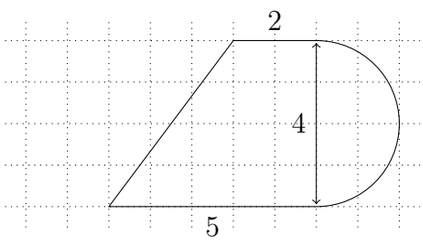
Score: /3

Problem 8: We have a slice of a circular pie with a diameter of 10 cm. The area of this slice is 30 cm^2. What is the perimeter of this slice?



Score: /3

Problem 9: We have a lot in the following shape consisting of a trapezoid with bases of lengths 2 and 5 that has a semicircle of diameter 4 attached to its side. Find its area and perimeter.



Score: /4

/10