

Math 123-01
Fall 2025
Dr. Lily Yen

Midterm 1
Show all your work

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

Problem 1: Convert each of the following into Hindu-Arabic numeral base-10.

a. 210123_4

b.   

c.   

Score: ____/6

Problem 2: Convert 2574_{10} to Mayan numerals.

Score: ____/2

Problem 3: We know that we have between 100 and 150 books in our STEM library. If we organize the books in groups of 9s, there are 2 left over; in groups of 7s, 4 books left over. How many books do we have?

Score: ____/2

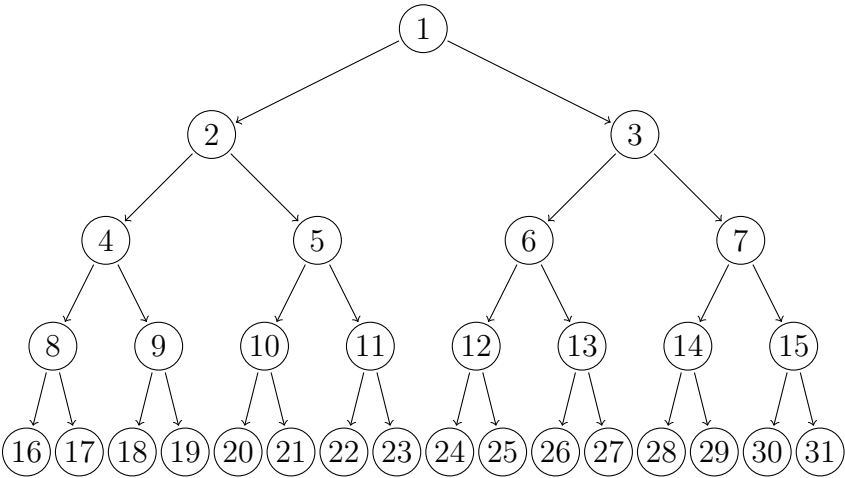
Problem 4: On a Safari Hobby Farm, Farmer Jens has 5 ostriches, 2 zebras, and 3 gazelles. Suppose Farmer Jens needs to bring one of each kind of animals to an elementary school’s fun fair, how many different groups of 3 (namely, an ostrich, a zebra, and a gazelle) are there?

Score: /2

Problem 5: Sarbjit has 19 coins in her wallet which are either dimes (10-cent coins) or quarters (25-cent coins). She has a total of \$2.35 worth of coins in her wallet. How many dimes does Sarbjit have?

Score: /3

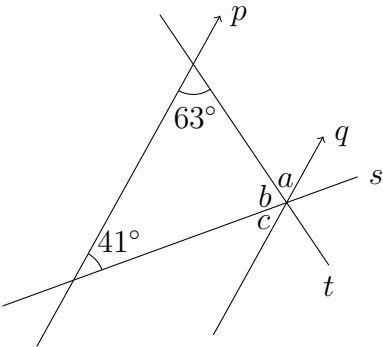
Problem 6: Shown is a binary tree organized in levels: Level 0 has 1 node; level 1 has 2 nodes (labelled 2 and 3); level 2 has 4 nodes (labelled 4, 5, 6, 7).



- a. How many nodes (circles) are in level 3?
- b. Which level of the tree contains the label 27?
- c. If you continue this pattern and draw the next level of the tree, what will the largest label be for the rightmost node?
- d. Which level of the tree contains the 4-digit label, 1234? Show your work.

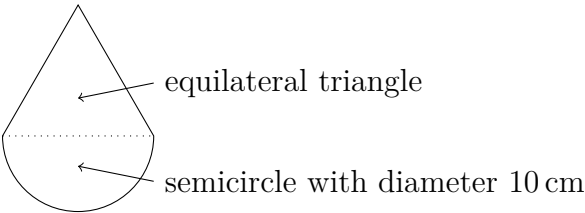
Score: /5

Problem 7: Lines p and q are parallel. Lines s and t are transversals. Find the measures of angles a , b , and c .



Score: /3

Problem 8: Shown is an equilateral triangle with its base equal to the diameter of a semicircle. If the diameter is 10 cm, find both the perimeter and the area of the figure.

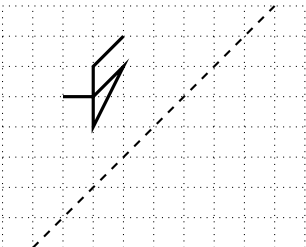


Score: /5

Problem 9: Find the measure of one interior angle of a regular dodecagon (12-sided).

Score: /1

Problem 10: Reflect the given figure along the dashed line.



Score: /1