

MATH1007
Homework 5
Due Friday, October 14

When submitting homework, please remember the following:

- Show all work leading to each solution.
- *You must use a staple* (not paper clip) if your answers are longer than a single page.
- Do not submit crossed-out or sloppy work.
- Do not submit ripped or torn pages.
- Be sure to submit your own work.

1. Suppose that in an arithmetic sequence, $P_3 = 7$ and $P_{11} = 41$.

(a) What is P_{15} ?

(b) What is $P_3 + \cdots + P_{11}$?

2. Suppose that in a geometric sequence, $P_3 = 7$ and $P_{11} = 41$.

(a) What is P_{12} ?

(b) What is $P_3 + \cdots + P_{11}$?

3. A quiz with 4 questions was administered to a class, and scored on a scale of 0 through

4. Here are the results:

Grade	0	1	2	3	4
Number of students	13	18	19	25	22

(a) What is the mean grade?

(b) What is the median grade?

(c) What are the first quartile (Q_1) and third quartile (Q_3)?

(d) What is the 90th percentile?

4. You are purchasing a home, and need to borrow \$135000. You have two options:

(a) Bank A offers a 30-year loan with 5.5% APR and monthly payments.

(b) Bank B offers a 30-year loan with 5.3% APR, monthly payments, and a 4% fee that can be added to the initial loan.

Which bank offers a better deal?

5. I have a \$350,000 mortgage with a 6.75% APR, compounded monthly, and a 25-year term.

(a) What is my monthly payment?

(b) After I have made 15 payments, what is the outstanding principal on the loan? The *outstanding principal* is the amount of principal still owed to the bank.

6. Suppose that a set of examination scores is normally distributed, with mean $\mu = 81.4$ and standard deviation $\sigma = 2.6$.

(a) What are Q_1 and Q_3 ?

(b) Find scores A and B so that 95% of the examination scores are between A and B.

7. Suppose that the mean (average) of 6 numbers is 11.2, and that the smallest of the 6 numbers is 5.1. Let x be the *maximum* of the 6 numbers.

(a) What is the smallest possible value for x ?

(b) What is the largest possible value for x ?