

## 2<sup>nd</sup> Semester Final Midpoint Test

### Integrated Math I

#### Unit 5: Real World Applications

**Solve each question. Round your answer to the nearest hundredth when needed.**

1) Working alone, Anjali can weed a garden in 13 minutes. Castel can weed the same garden in 16 minutes. Find how long it would take them if they worked together.

2) An Air Force plane left Paris flying south five hours before a cargo plane. The cargo plane flew in the opposite direction going 60 km/h faster than the Air Force plane for seven hours after which time the planes were 3840 km apart. How fast did the Air Force plane fly?

3) A freight train left Washington four hours before a diesel train. The trains traveled in opposite directions. The diesel train traveled at 25 km/h for 12 hours. After this time the trains were 1100 km apart. What was the freight train's speed?

4) Arjun wants to make 12 qt. of an 80% alcohol solution by mixing together a 40% alcohol solution and an 88% alcohol solution. How much of each solution must he use?

5) The difference of two numbers is 4. Their sum is 24. Find the numbers.

6) John and Arjun are selling cheesecakes for a school fundraiser. Customers can buy New York style cheesecakes and chocolate marble cheesecakes. John sold 6 New York style cheesecakes and 4 chocolate marble cheesecakes for a total of \$112. Arjun sold 12 New York style cheesecakes and 12 chocolate marble cheesecakes for a total of \$276. What is the cost each of one New York style cheesecake and one chocolate marble cheesecake?

7) Julia and Danielle each improved their yards by planting daylilies and ornamental grass. They bought their supplies from the same store. Julia spent \$92 on 8 daylilies and 4 bunches of ornamental grass. Danielle spent \$182 on 14 daylilies and 10 bunches of ornamental grass. What is the cost of one daylily and the cost of one bunch of ornamental grass?

8) Jasmine's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 9 senior citizen tickets and 2 child tickets for a total of \$122. The school took in \$192 on the second day by selling 9 senior citizen tickets and 12 child tickets. What is the price each of one senior citizen ticket and one child ticket?

9) The country fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 10 vans and 10 buses with 690 students. High School B rented and filled 10 vans and 5 buses with 430 students. How many students can a van carry? How many students can a bus carry?

10) Jose bought 8 book for a total of \$430. Math books cost \$50 and science books cost \$60. How many of each type of book did he buy?

11) At James' Printing Company LLC there are two kinds of printing presses: Model A which can print 80 books per day and Model B which can print 60 books per day. The company owns 18 total printing presses and this allows them to print 1240 books per day. How many of each type of press do they have?

12) Going down the river a boat went 12 mph. Going up the river it only went 2 mph. Find the current and the speed of the boat if there were no current.

13) A boat traveled 325 miles each way downstream and back. The trip downstream took 13 hours. The trip back took 65 hours. What is the speed of the boat in still water? What is the speed of the current?

**Unit 6: Arithmetic Sequences**

**Determine if the sequence is arithmetic. If it is, then find the common difference.**

14) 24, 14, 4, -6, ...	15) -40, -49, -58, -67, ...
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**Find the specified formula for each of the given arithmetic sequences:**

16) Recursive Formula for -35, -26, -17, -8, ...	17) Explicit Formula for 32, 40, 48, 56, ...
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**Given the arithmetic sequence answer each of the following:**

**-24, -14, -4, 6, ...**

18) Find the next three terms	19) Find $a_{33}$	20) Find $a_{52}$
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Find the missing term or terms in each arithmetic sequence.

21) ..., -9, \_\_\_\_\_, 31, ...

22) ..., 5, \_\_\_\_\_, \_\_\_\_\_, 305, ...

23) ..., -16, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 64, ...

24) ..., 9, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 59...

25) ..., -11, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, -29, ...

Evaluate the related series of the sequence.

26) 5, 8, 11, 14, 17, 20

Evaluate each arithmetic series described:

27)  $(-46) + (-56) + (-66) + (-76) \dots, n = 10$

28)  $\sum_{n=1}^{45} (-2n - 2)$

29)  $a_1 = 3, d = 3, n = 5$

## Unit 7: Geometric Sequences

Determine if the sequence is geometric. If it is, then find the common ratio.

30) 4, -8, 16, -32, ...	31) -3, -12, -48, -192, ...
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Find the specified formula for each of the given geometric sequences:

32) Recursive Formula for -4, 16, -64, 256, ...	33) Explicit Formula for 1, 4, 16, 64, ...
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Given the geometric sequence answer each of the following:

**3, 9, 27, 81, ...**

34) Find the next three terms	35) Find $a_8$	36) Find $a_{12}$
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Find the missing term or terms in each geometric sequence.

37) ..., -1, _____, -4, ...
38) ..., 4, _____, _____, 256, ...
39) ..., -1, _____, _____, _____, -625, ...
40) ..., 4, _____, _____, _____, _____, 972, ...
41) ..., -4, _____, _____, _____, _____, _____, -2916, ...

Evaluate the related series of the sequence.

42. -3, 12, -48, 192, -768

Evaluate each geometric series described:

43)  $-1 - 4 - 16 - 64 \dots, n = 9$

44)  $\sum_{i=1}^{10} 2(3)^{i-1}$

45)  $a_1 = -3, a_9 = -196608, r = 4$

**Unit 8: Statistics**

Find the mean, median, mode, range, maximum, and medium:

46)

Goals in a Hockey Game

6	7	11	3	11	5
4	5	2	5	8	6
4	9	6	11	6	5
5	5	2	9		

Maximum	Minimum	Range	Mean	Median	Mode

Draw a dot plot for each data set:

47)

# Works in Book Titles

1	3	5	2	3	4
4	2	4	5	4	4
2	3	6	3	2	6
2	1	2	3	1	

Draw a stem-and-leaf plot for each data set:

48)

Single Family Home Prices

598500	580600	580900	576100	598700	594100
596500	600900	609300	578000	601700	565800
583200	597300	610600	599300	597000	600800
577600	590100	606100	599500	569600	

Draw a histogram for the data set:

49)

**Annual Household Income**

\$18,650	\$14,350	\$13,600	\$19,800	\$24,400	\$38,350
\$31,100	\$19,750	\$10,000	\$12,050	\$17,600	\$10,350
\$13,050	\$26,450	\$17,450	\$17,000	\$9,800	\$14,900
\$12,700	\$44,500	\$45,500	\$34,750	\$13,450	

Draw a box-and-whisker plot for each data set:

50)

**Single Family Home Prices**

\$206,600	\$204,500	\$207,700	\$199,900	\$196,400	\$222,800
\$213,500	\$210,600	\$205,200	\$201,900	\$220,700	\$214,900
\$229,700	\$206,900	\$213,400	\$197,400	\$227,400	\$201,100
\$204,700	\$193,700	\$218,600	\$221,300		