

Math 1A Honors Final Review

1. Solve the equation: $2(4x + 2) = 4x - 12(x - 1)$

$$8x + 4 = 4x - 12x + 12$$
$$16x = 8 \quad x = \frac{1}{2}$$

- a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) 0 d) 2

2. Companies A and B are internet providers. Company A charges a \$60 installation fee and \$42.95 per month. Company B charges a \$25 installation fee and \$49.95 per month. Find the month when you would pay the same total amount for internet service.

$$60 + 42.95x = 25 + 49.95x$$
$$35 = 7x$$
$$\frac{35}{7} = \frac{7x}{7}$$

- a) 5th month b) 10th month c) 12th month d) They will never be the same

3. Solve. $|x - 8| = 14$

$$x - 8 = 14 \quad x - 8 = -14$$
$$x = 22 \quad x = 6$$

- a) 22, b) $\frac{14}{8}$ c) 22, 6 d) 22, -6

4. Solve. $-|3x - 4| = -5$

$$3x - 4 = 5 \quad 3x - 4 = -5$$
$$3x = 9 \quad 3x = -1$$
$$x = 3 \quad x = -\frac{1}{3}$$

- a) 3 b) $3, \frac{1}{3}$ c) $3, -\frac{1}{3}$ d) No Solution

5. Solve the literal equation for y . $9x - y = 45$

$$y = 9x - 45$$

- a) $y = 9x - 45$ b) $y = x - 5$ c) $y = 45x - 9$ d) $y = -9x + 45$

6. The formula to convert from Celsius to Fahrenheit is: $F = \frac{5}{9}C + 32$. Solve for C .

$$\frac{9}{5}(F - 32) = \frac{5}{9}C \left(\frac{9}{5}\right)$$

- a) $C = \frac{9}{5}F - 32$ b) $C = \frac{9}{5}(F - 32)$ c) $C = \frac{5}{9}(F - 32)$ d) $C = \frac{5}{9}(F + 32)$

In problems 7 & 8, solve the inequality and give the answer in interval notation.

7. $2x - 3 > 7$

$2x > 10$
 $x > 5$

- a) $(2, \infty)$ b) $(-\infty, 2)$ **c) $(5, \infty)$** d) $(-\infty, 5)$

8. $3 - 5x \leq 13$

$-5x \leq 10$
 $x \geq -2$

- a) $[2, \infty)$ **b) $[-2, \infty)$** c) $(-\infty, 2]$ d) $(-\infty, -2]$

In problems 9 & 10, solve the compound inequality and answer in interval notation.

9. $-9 \leq -3r - 3 < 24$

$-6 \leq -3r < 27$
 $\frac{-6}{-3} \leq \frac{-3r}{-3} < \frac{27}{-3}$

$2 \geq r > -9$ $-9 < r \leq 2$

- a) $[0, 11)$ b) $(0, 11]$ **c) $(-9, 2]$** d) $[-9, 2)$

10. $2r + 3 < 7$ or $-r + 9 \leq 2$

$r < 2$ $-r \leq -7$
 $r \geq 7$

- a) $(2, 7]$ b) $[2, 7)$ c) $(-\infty, 2] \cup (7, \infty)$ **d) $(-\infty, 2) \cup [7, \infty)$**

Solve the inequality and answer in interval notation.

$-10 \leq |x - 5| \leq 10$
 $-5 \leq x \leq 15$

$x - 5 \leq 10$
 $x \leq 15$

$x - 5 \geq -10$
 $x \geq -5$

- a) $[-5, 15]$** b) $(-5, 15)$ c) $(-\infty, -5) \cup (15, \infty)$ d) $(-\infty, -5] \cup [15, \infty)$

In problems 12 & 13, determine if the relation represents a function.

12. $(1, 1), (2, 1), (3, 2), (4, 2)$

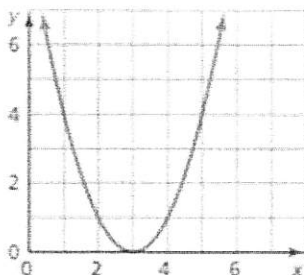
13. $(1, 0), (1, 2), (2, 3), (2, 5)$

- a) Yes** b) No

- a) Yes **b) No**

14. Does the graph represent a function?

- a) Yes** b) No



Add "x" to # 18

In problems 15 & 16, determine whether each equation represents a linear or nonlinear function.

15. $y = x^2 - 3$

- a) linear b) nonlinear

17. $f(x) = 2x - 3$, evaluate $f(-2)$.

$f(-2) = 2(-2) - 3$
 $-4 - 3 = -7$

- a) 1 b) -5 c) -7 d) -10

16. $y = 2(x - 3)$

- a) linear b) nonlinear

18. $f(x) = -\frac{4}{5}x + 7$, find x when $f(x) = -5$

$-\frac{4}{5}x + 7 = -5$
 ~~$(-\frac{8}{4}) \times \frac{4}{5}x = -2(-\frac{6}{4}) =$~~

- a) 3 b) 11 c) 27 d) 15

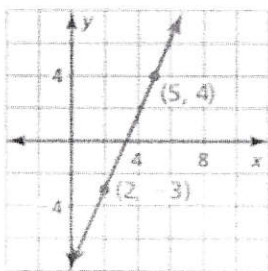
19. Find the x and y intercepts of the linear equation: $2x + 3y = 12$

- a) x-intercept = 6 y-intercept = 4 b) x-intercept = 2 y-intercept = 3 c) x-intercept = -2 y-intercept = -3 d) x-intercept = -6 y-intercept = 4

$\begin{array}{r|l} x & y \\ \hline 6 & 0 \\ 0 & 4 \end{array}$

20. Find the slope.

- a) 7 b) $\frac{3}{7}$
 c) $\frac{1}{7}$ d) $\frac{7}{3}$



$\frac{7}{3}$

$\frac{4 - 3}{5 - 2} = \frac{1}{3}$

21. Find the slope and y-intercept of the linear equation: $-5x = 8 - y$

$y = 5x + 8$

- a) $m = -5$ y-int = 8 b) $m = -\frac{5}{8}$ y-int = 8 c) $m = -1$ y-int = -8 d) $m = 5$ y-int = 8

22. If $f(x) = 2x$, describe the transformation from f to g . $g(x) = f(x) + 2$

- a) right 2 b) left 2 c) up 2 d) down 2

23. If $f(x) = 2x$, describe the transformation from f to g . $g(x) = f(x - 2)$

- a) right 2 b) left 2 c) up 2 d) down 2

24. Find a linear function with the values: $f(0) = 2$ and $f(2) = 4$.

$\frac{4 - 2}{2 - 0} = \frac{2}{2} = 1$

- a) $y = x + 2$ b) $y = 2x + 2$ c) $y = \frac{1}{2}x + 2$ d) $y = x - 2$

25. Find a linear function that has a slope of 2 and passes through the point (2, 1)

$y - 1 = 2(x - 2)$ $y - 1 = 2x - 4$
 $y = 2x - 3$

- a) $y = 2x + 1$ b) $y = 2x + 2$ c) $y = 2x - 3$ d) $y = \frac{1}{2}x$

26. Find a linear equation that passes through the points (7, 2) and (2, 12).

$$y - 2 = -2(x - 7)$$

$$y - 2 = -2x + 14$$

$$\frac{10}{-5} = -2$$

- a) $y = 2x + 16$ b) $y = 2x - 16$ c) $y = -2x - 16$ d) $y = -2x + 16$

For problems 27 and 28, use the table shown.

27. Use a calculator to find the line of best fit.

- a) $y = 1.39x + 4$ b) $y = 4x + 1.39$
 c) $y = -1.39x + 4$ d) $y = -4x + 1.39$

1	5
2	8
3	7
4	10
5	11
6	12
7	14

28. The correlation coefficient for the line of best fit is 0.9412. Is the line a good fit?

- a) Yes b) No c) cannot be determined

In problems 29 – 31, use the arithmetic sequence 13, 18, 23, 28... $d=5$ $a_1=13$

29. What are the next three terms of the arithmetic sequence?

- a) 29, 32, 33 b) 33, 36, 39 c) 33, 38, 43 d) this is not an arithmetic sequence

30. Give the explicit equation for the arithmetic sequence. $a_n = 13 + (n-1)(5)$

- a) $a_n = n + 5$ b) $a_n = 5n + 8$ c) $a_n = 2n + 5$ d) does not have an explicit equation

31. Give the recursive equation for the arithmetic sequence.

- a) $a_1 = 13; a_n = a_{n-1} + 5$ b) $a_1 = 13; a_n = a_n + 5$ c) $a_1 = 28; a_n = a_{n-1} + 5$ d) Not possible

In problems 32 – 34, solve the system of equations.

32. $y = -x + 4$
 $y = 2x - 8$

- a) (0, 0) b) (0, 4) c) (4, 0) d) No Solution

$$-x + 4 = 2x - 8$$

$$12 = 3x \quad x = 4$$

33. $-5x + 3y = 51$
 $y = 10x - 8$

- a) (0, 0) b) (3, 22) c) (22, 3) d) IMS

$$-5x + 3(10x - 8) = 51$$

$$-5x + 30x - 24 = 51$$

$$25x = 75$$

$$x = 3$$

$$\begin{aligned}
 34. \quad & \begin{cases} 9x - 15y = 24 \\ 6x - 10y = -16 \end{cases} \\
 & \begin{aligned} & \times 2 \\ & \hline -6x + 10y = -16 \\ \hline 0 & = -32 \end{aligned}
 \end{aligned}$$

- a) (0, 0) b) (6, 2) c) (2, 6) d) No Solution

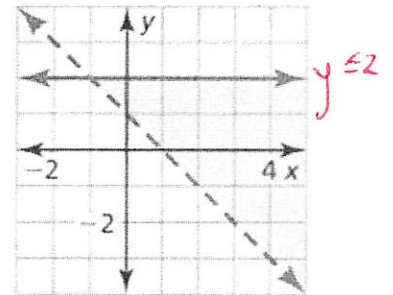
35. You are running a concession stand at a basketball game. You are selling hot dogs and sodas. Each hot dog sells for \$1.50 and each soda sells for \$2.75. At the end of the night you made a total of \$188.00. You sold a total of 92 hot dogs and sodas combined. You must report the number of hot dogs sold and the number of sodas sold. How many hot dogs were sold and how many sodas were sold?

$$\begin{aligned}
 & \begin{aligned} x + y &= 92 & x &= 92 - y \\ 1.5x + 2.75y &= 188 \\ 1.5(92 - y) + 2.75y &= 188 \\ 138 - 1.5y + 2.75y & & x &= 92 - 40 \\ & & &= 52 \\ & & & \text{52 hot dogs} \\ & & & \text{40 sodas} \end{aligned} \\
 & \begin{aligned} 1.25y &= 50 & y &= 40 \end{aligned}
 \end{aligned}$$

- a) 52 hot dogs
40 sodas b) 40 hot dogs
52 sodas c) 50 hot dogs
42 sodas d) 57 hot dogs
35 sodas

36. What is the system of inequalities that are represented by the graph.

- a) $y < -x + 1$
 $y \geq 2$ b) $y > -x + 1$
 $y \leq 2$ c) $y \geq -x + 1$
 $y < 2$ d) $y \leq -x + 1$
 $y > 2$



For problems 37 – 41, use the following data set.

14, 15, 3, 15, 14, 14, 18, 15, 10, 16, 14

37. What is the mean?

- a) 13.5 b) 14.6 c) 11.2 d) 10.9

38. What is the median?

- a) 15 b) 14 c) 12 d) 11

39. What is the mode?

- a) 3 b) 18 c) 15 d) 14

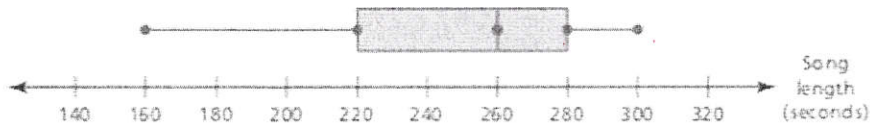
40. What is the range? $18 - 3 = 15$

- a) 3 b) 18 c) 15 d) 14

41. What is the standard deviation?

- a) 3.77 b) 2.56 c) 4.01 d) 3.25

For questions 40 – 46, use the box and whisker plot of song lengths.



42. What is the minimum song length?

160 seconds

44. What is the median song length?

260 seconds

46. What is the song length at the third quartile?

280 seconds

48. What is the interquartile range of the data?

$280 - 220 = 60$ seconds

43. What is the maximum song length?

300 seconds

45. What is the song length at the first quartile?

220 seconds

47. What is the range of the data?

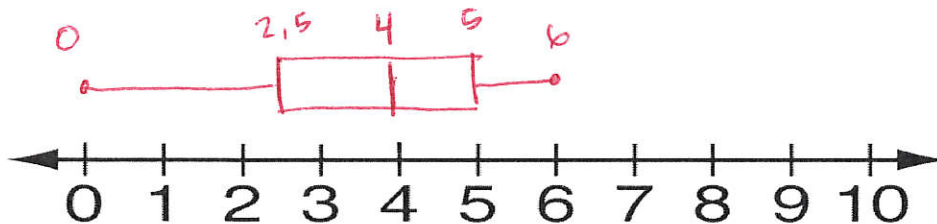
$300 - 160 = 140$ seconds

49. What is the shape of the distribution?

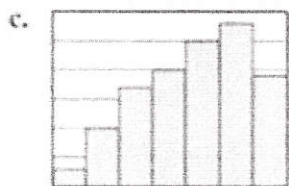
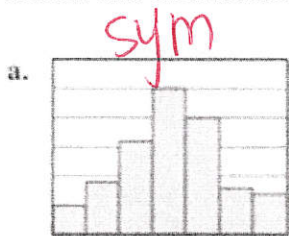
skewed left

50. Make a box and whisker plot for the hours of television watched: 0, 3, 4, 5, 2, 4, 6, 5

0 | 3 4 | 5 | 5 | 6



51. Match the distribution represented by the histogram with the corresponding box and whisker plot.



a. C

b. A

c. B



52. Explain what it means for a distribution to be skewed to the right.

outliers that are big - most of the data is to the left / smaller. Median > Mean