

# Midterm Review Answer Key

1

|            | Yes | No | Total |
|------------|-----|----|-------|
| 11th Grade | 25  | 35 | 60    |
| 12th Grade | 55  | 15 | 70    |
| Total      | 80  | 50 | 130   |

2

a  $\frac{40}{150} = \frac{4}{15}$

b  $\frac{30}{75} \times 100 = 40\%$

c  $\frac{40}{60} \times 100 = 66.7\%$

3

a  $y = -4.03893x + 133.044$

b  $r = -0.8133$

c There is a strong negative association between degrees North latitude and low temp.

d  $y = -4.03893(25) + 133.044 = 32.07075$

e  $y = -4.03893(50) + 133.044 = -68.9025$

4 True

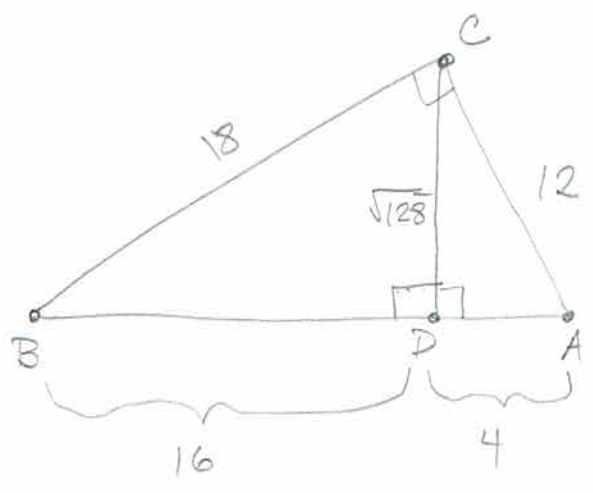
5 False

6 True

7  $\frac{AB}{AC} = \frac{6}{1.5} = 4$ ,  $\frac{EO}{EF} = \frac{2}{0.5} = 4$ , those are the same BUT we don't have info on DF, so we can't determine.

8)  $\frac{A'B'}{AB} = \frac{4.5}{3} = 1.5$

9)



ΔDAC

$$4^2 + CD^2 = 12^2$$

$$16 + CD^2 = 144$$

$$CD^2 = 128$$

$$CD = \sqrt{128}$$

ΔBDC

$$16^2 + (\sqrt{128})^2 = BC^2$$

$$256 + 128 = BC^2$$

$$\sqrt{384} = \sqrt{BC^2}$$

$$BC = 18$$

ΔBCA

~~$$18^2 + 12^2 = 20^2$$

$$384 + 144 = 400$$~~

no, skip this one.

10) Yes, SSS (side-side-side) similarity

$$\frac{4}{6} = \frac{6}{9} = \frac{5}{7.5} \quad (\text{same scale-factor for all sides})$$

11)  $\frac{6}{12} \neq \frac{5}{14}$  so we can't do SAS (side-angle-side) that way

$\frac{6}{14} \neq \frac{5}{12}$  so we can't do SAS that way either.

No.

12) Angle-Angle will work on this one. The angles for each triangle are  $40^\circ, 60^\circ, 80^\circ$ .

13  $\frac{6}{7} = \frac{x}{5}$

$$\frac{30}{7} = \frac{7x}{7}$$

$$x = \frac{30}{7} = 4\frac{2}{7}$$

14  $\frac{x}{7} = \frac{15}{10}$

$$\frac{10x}{10} = \frac{105}{10}$$

$$x = 10.5$$

15 a)  $54 + 11 + 32 + 20 = 117$

b)  $P(\text{instrument only}) = \frac{32}{117} = 0.27$

c)  $P(\text{sports and instrument}) = \frac{11}{117} = 0.09$

d)  $P(\text{does not play sports}) = \frac{32 + 20}{117} = \frac{52}{117} = 0.44$

e)  $P(\text{does not play sports \& does not play an instrument}) = \frac{20}{117} = 0.17$

f) skip

16

|        | Math | English | Science |
|--------|------|---------|---------|
| Junior | 14   | 36      | 20      |
| Senior | 11   | 44      | 25      |

17 a)  $P(\text{female}) = \frac{252}{513}$        $P(\text{female \& evening}) = \frac{18}{513}$   
 $P(\text{evening}) = \frac{33}{513}$

$P(\text{female or evening}) = \frac{252}{513} + \frac{33}{513} - \frac{18}{513} = \frac{267}{513} = 0.52$

b)  $P(\text{night} | \text{male}) = P(\text{night given male})$

c)  $P(\text{night} | \text{male}) = \frac{117}{261} = 0.45$

18 skip

- 19 a) The percent of modern paintings in the museum.  
 b) The percent of classical paintings in the museum.  
 c) The percent of modern sculpture in the museum.  
 d) The percent of classical sculpture in the museum.

20 a)  $\frac{635}{2540} = 0.25$

b)  $\frac{595}{2540} = 0.23$

c)  $\frac{110}{2540} = 0.04$

d)  $\frac{635}{2540} + \frac{595}{2540} - \frac{110}{2540} = \frac{1120}{2540} = 0.44$

e)  $\frac{110}{595} = 0.18$

f)  $P(\text{senior} | \text{large cafe}) = \frac{350}{1085} = 0.32$        $P(\text{senior} | \text{student center}) = \frac{280}{595} = 0.47$   
 True.

21 skip

22 a)  $y = -0.61x + 12.03$

b)  $r = -1.00$

c)  $y = -0.61(6) + 12.03 = \boxed{8.37}$

d)  $4.5 = -0.61x + 12.03$   
 $-12.03 \qquad -12.03$

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$$\frac{-7.53}{-0.61} = \frac{-0.61x}{-0.61}$$

$$\boxed{12.34 = x}$$

23 a) Yes, it matches Desmos.

b)  $m = -0.5$ , the tank loses 0.5 cm of depth a day.

c)  $b = 28.9$ , the initial depth of the tank before it starts leaking.

d)  $r = -0.9988$ , this indicates a strong negative association.

24 a. False

b. False

c. True

d. The slope indicates this, but the y-intercept is 110, so if you're on the phone 10 minutes

$$y = 4.84(10) + 110.3 = 158.7 \text{ (}\approx 15.8 \text{ texts per minute)}$$

e. False

25) A

26) a. It means that the number of fast food restaurants in a town has a large effect on real estate prices.

b. It means that the more fast food restaurants a town has, the lower the real estate prices.

27) a.  $r = -0.6$

b.  $r = 1$

c.  $r = 0.7$

d.  $r = 0$