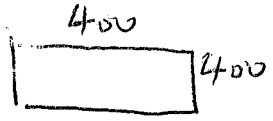
AMDM
Fall Final Exam REVIEW

Key

A concert promoter wants to hold a concert in the park. The area of the park he plans to use is 400 feet long and 400 feet wide. If the average person es of 8 square feet of area. How many people can fit into the space for the concert?



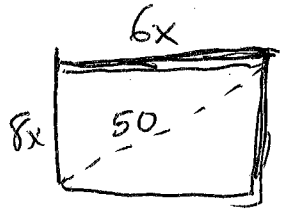
Area = $160{,}000\ ft^2$

# of people = $\frac{160{,}000\ ft^2}{8\ ft^2} = 20{,}000$ people

The 7-digit numbers in a given phone number have the form ABC – XXXX, where A can be digits 1 – 5, B can be digits 1 – 6, C can be digits 1 – 7, and X can be digits 1 – 8. According to these conditions, how many 7-digit numbers are possible?

$5 \cdot 6 \cdot 7 \cdot 8^4 =$ 860,160 phone numbers

If I have a TV screen that is 50" with an aspect ratio of 8: 6. What is the area of the TV screen?



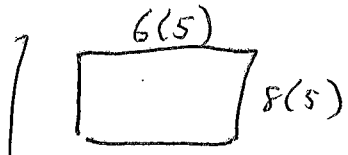
$(8x)^2 + (6x)^2 = 50^2$

$64x^2 + 36x^2 = 2500$

$100x^2 = 2500$

$x^2 = 25$

$x = 5$



Area = 30 x 40

Area = $1200\ in^2$

rim = 15

What is the diameter of the tire that has measurements **P150/60/15**?

$D = 2(\text{height}) + \text{rim} \rightarrow 2(3.5) + 15 = 22$

Tire	P150/60/15	P200/40/20 ← rim
Width (mm)	150	200
Aspect Ratio (%)	0.60	0.40
Height (in)	3.5	3.1
Diameter (in)	22	26.2
Circumference (in)	69.115	82.31

$\pi d =$ ↑ πd ↑

What is the diameter of the tire that has measurement **P200/40/20**?

$D = 2(3.1) + 20 = 26.2$

What is the circumference of the tire that has measurements **P150/60/15**?

69.115 in.

What is the circumference of the tire that has measurements **P200/40/20**?

82.31 in.

The value for **k** equals? $\frac{82.31}{69.115} =$ 1.19

If your odometer reading is 50,000 miles, the car actually has how many miles?

$50{,}000 \times 1.19 =$ 59,545 mi

If your speedometer reading is 60 mph, what is the actual speed it is traveling?

$60 \times 1.19 =$ 71.4 mph

Averages	%	Grades
Class Participation = 90	0.20	18
Homework = 80	0.20	16
Test = 70	0.30	21
Final Exam = 60	0.30	18

Given the chart above, what will be the student's overall grade?

$90(0.2)+80(0.2)+70(0.3)+60(0.3)=$ **73**

Determine the slugging percentage for each player using the stats provided.

Singles – 70 **Doubles – 30** **Triples – 20** **HRs – 30** **AB –400**

What will be the player's overall slugging percentage?

$$SLG=\frac{(1\times S)+(2\times D)+(3\times T)+(4\times HR)}{AB} \rightarrow \frac{(1\times 70)+(2\times 30)+(3\times 20)+(4\times 30)}{400}=\frac{310}{400}=$$

0.775

Determine the QBR for the player using the stats provided.

Completions – 24 **Attempts – 40** **TDs – 4** **INTs – 2** **Total Yards – 280**

What will be the player's overall QBR? $\frac{25}{40}=62.5\rightarrow \%comp$ $\frac{4}{40}\rightarrow 10\rightarrow \%TD$ $\frac{2}{40}\rightarrow 5\rightarrow \%INT$ $YD: \frac{280}{40}\rightarrow 7$

$$QBR=\frac{25+(10\times \%Comp)+40(\%TD)-50(\%INT)+50(YD)}{12}$$

$$QBR=\frac{25+(10\cdot 62.5)+(40\cdot 10)-(50\cdot 5)+(50\cdot 7)}{12}=\frac{1150}{12}=$$ **95.83**

2015 FAN COST INDEX

Team	Avg. Ticket Price	Soft Drink (size in oz.)	Other Drink	Hot Dog	Parking	Program	Cap	FCI
VIKINGS	50.00	7.00 (25)	25.00	5.00	50.00	16.00	20.00	420
49ERS	40.00	5.00 (25)	20.00	10.00	80.00	15.00	20.00	410
REDSKINS	40.00	8.00 (25)	20.00	10.00	60.00	10.00	40.00	432
TEXANS	50.00	6.00 (25)	15.00	5.00	60.00	5.00	10.00	364

Which team had the lowest FCI? Texans

Which team had the highest FCI? 432

Which team had the lowest soft drink price per ounce? 49ers $\frac{5}{25}$ 0.2 $/ounce

Which team had the highest soft drink price per ounce? $\frac{8}{25}$ 0.32 $/ounce

Redskins

Determine the value of the check digit for the UPC code below.

8 – 21123 – 23409 – d

What will the value of the check digit have to be to make the UPC code above valid?

$3(8+1+2+2+4+9) = 78$

$2+1+3+3+0+d = 9+d$

$78+9+d = 87+d$

$d = 3$

$87+3 = 90$

Determine the value of the check digit for the CC number below.

5232 – 1177 – 3324 – 123d

What will the value of the check digit have to be to make the CC number above valid?

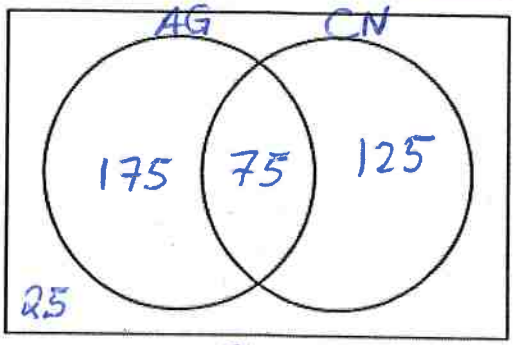
$2(5+3+1+7+3+2+1+3) = 2(25) = 50+2 = 52$

$2+2+1+7+3+4+2+d = 21+d$

$52+21+d = 73+d = 80$

$d = 7$

400 people were surveyed
250 people read the Amarillo Globe
200 people read the Canyon News
75 people read both
25 people read neither



What is the probability that someone reads the Amarillo globe?

$P(AG) = \frac{250}{400}$ 62.5%

What is the probability that someone reads the Canyon News?

$P(CN) = \frac{200}{400} = 50\%$

What is the probability that someone reads Amarillo Globe AND the Canyon News?

$\frac{75}{400} = 18.75\%$

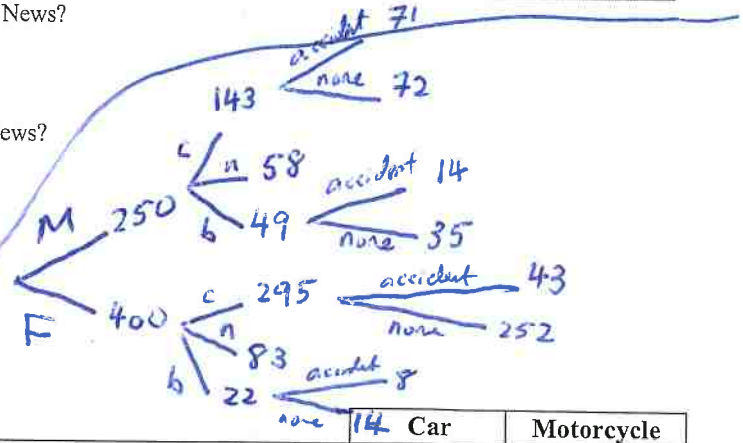
What is the probability that someone reads Amarillo Globe OR the Canyon News?

$\frac{375}{400} = 93.75\%$

What is the probability that someone reads neither?

$\frac{25}{400} = 6.25\%$

650 students surveyed, 400 are female.



	Car	Motorcycle
Males with vehicle	143	49
Males involved in accident	71	14
Females with vehicle	295	22
Females involved in accident	43	8

How many males were involved in a car accident?

71

How many females own a motorcycle?

22

How many males were involved in a motorcycle accident?

14

How many females were involved in a car accident?

43

How many males own a motorcycle?

49

- If no wager is made Yvonne gets $25 a week
- If Yvonne misses the first basket, she gets only $15
- If Yvonne makes the first basket, she gets $20 and a chance to make another basket for an additional $20
- 52 weeks in a year
- 31 weeks a year Yvonne will miss the first basket
- 13 weeks a year Yvonne will make the first basket, but miss the second basket
- 8 weeks a year Yvonne will make both baskets

How much allowance will Yvonne get if no wager is made?

25 a week $25 \times 52 = \$1300$

How much allowance will Yvonne get if the wager is made?

$(31)(15) + 13(20) + 40(8) = \$1045$

How much money will Yvonne's father save if they make the wager?

$1300 - 1045 = \$255$

- **Mean = 32**
- **n = 1450**
- **Standard deviation = 4.59**

What is the margin of error for the data set?

$\frac{1}{\sqrt{n}} \rightarrow \frac{1}{\sqrt{1450}} = 0.026 \rightarrow 2.63$

What is the upper bound for the data set?

$32 + 2.63 = 34.6$

What is the standard deviation for the data set? 4.59

(Q1) (Q3)

7 10 11 12 12 13 17 19 20 23 28 29 32 43

10	12	23	7	12	29	13	19	17	11	32	43	28	20

What is the minimum for the data set?

7

What is the maximum for the data set?

43

What is the median for the data set? 18 (b/t 17 and 19)

What is Q1 for the data set? 12

What is Q3 for the data set? 28

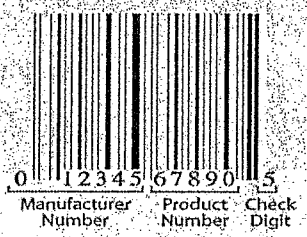
Activity Sheet 10

Universal Product Code (UPC)

Identification numbers are present everywhere in society. Today's identification numbers are more sophisticated than those introduced years earlier (for example, Social Security numbers). Today's numbers have a **check digit** to partially ensure that they have been correctly scanned or entered into a computer.

Universal Product Codes (UPCs), typically in the form of barcodes, identify retail products.

The 12-digit UPC barcode consists of three parts:



- Manufacturer number
- Product number
- Check digit

For example, the manufacturer number for the **Dr. Pepper Company is 078000** and it appears in the first six digits of all of the company's product UPC barcodes. GS1, formerly the Uniform Code Council, issues a company this six-digit number. Every item sold by a company requires a different five-digit product number. This includes specific products, their different sizes, their array of colors, their variety of flavors, and other distinguishing features. The last number is the **check digit**, which guards against entry errors and fraud.

The check digit in a UPC number (that is, the twelfth digit) is determined in the following manner:

The check digit is chosen so that the calculation described previously totals a number whose final digit is 0. In the UPC number $a_1a_2a_3a_4a_5a_6a_7a_8a_9a_{10}a_{11}\mathbf{d}$, the **check digit** is **d**, for which the sum:

$$3a_1 + a_2 + 3a_3 + a_4 + 3a_5 + a_6 + 3a_7 + a_8 + 3a_9 + a_{10} + 3a_{11} + \mathbf{d} = \text{a number that ends in zero}$$

1. Show that $\mathbf{0 - 58200 - 48826 - 5}$ is a valid UPC number.

3x(0 8 0 4 8 6)
5 2 0 8 2 5

$$3(0) + (5) + 3(8) + (2) + 3(0) + (0) + 3(4) + (8) + 3(8) + (2) + 3(6) + (5) = \mathbf{100\ Valid}$$

2. Show that $\mathbf{0 - 52200 - 48826 - 5}$ is an invalid UPC number.

$$3(0) + (5) + 3(2) + (2) + 3(0) + (0) + 3(4) + (8) + 3(8) + (2) + 3(6) + (5) = \mathbf{82\ Not\ Valid}$$

3. Determine the check digit (**d**) for the UPC number $3 - 81370 - 09213 - \mathbf{d}$.

$$3(3) + (8) + 3(1) + (3) + 3(7) + (0) + 3(0) + (9) + 3(2) + (1) + 3(3) + (\mathbf{d}) = 69 + \mathbf{d}$$

d has to be POSITIVE & SINGLE DIGIT, the only value for **d** that will make the UPC number Valid is $\mathbf{d = 1}$

4. Determine if the UPC code $\mathbf{3 - 88370 - 09213 - 4}$ is valid. **If not**, determine **what the 7th digit** would have to be to make it valid.

$$3(0) + (8) + 3(8) + (3) + 3(7) + (0) + 3(0) + (9) + 3(2) + (1) + 3(3) + (4) = \mathbf{85\ Not\ Valid}$$

The **7th digit** will need to be a **5**. $3(5) = 15$. $85 + 15 = \mathbf{100\ Valid}$

Activity Sheet 11

Credit Card Numbers

Identification numbers are present everywhere in society. Today's identification numbers are more sophisticated than those introduced years earlier (for example, Social Security numbers). Today's numbers have a **check digit** to partially ensure that they have been correctly scanned or entered into a computer.

Credit cards have 16-digit numbers, of which the first 15 digits identify the credit card, and the sixteenth digit is the check digit. The following figure shows the significance of the digits:

- MII stands for major industry identifier; 4 OR 5
- Visa cards begin with 4
- Mastercard cards begin with 5

The **check digit** is used to help validate credit card numbers. The credit card companies use the Codabar method to determine the check digit (d). This method consists of the following steps:

- Add the digits in the odd-numbered positions and double this total
- Add the number of odd-position digits that are more than 4 to the total
- Add the even-position digits
- Choose a check digit that makes this calculation total a number whose final digit is 0

1. Show that the check digit (d) for the Visa card $4162 - 0012 - 3456 - 789\mathrm{d}$ is 3.

$= 70 + 23 + 4 = 97$

$= 97 + 3 = 100$

4 6 0 1 3 5 7 9

1 2 0 2 4 6 8 d

2. Determine the check digit (d) for the Mastercard number $5424 - 9813 - 2720 - 008\mathrm{d}$.

$= 29 + 26 + 3 = 58$

$58 + 2 = 60 \qquad \mathrm{d} = 2$

5 2 9 1 2 3 0 8

4 4 8 3 7 0 0 d

3. Complete the following:

   a. Show that $4128 - 0012 - 4389 - 0110$ is an invalid Visa credit card number.

   $= 20 + 24 + 1 = 45$

   b. <u>If invalid</u>, determine **what the 9th digit** will need to be to make it valid.

   $45 + 5 = 50$

So I need 5 points. Since 4 is an odd digit, it will be multiplied by 2. If the number becomes larger than 4, then you have to add 1 as well. So if the 4 becomes a 6, that will give the 5 points needed. $= 2 * 2 + 1 = 5$

Activity Sheet 9

Fan Cost Index

An index is a numerical scale. Characteristics of an index can be used for the following:

- to compare variables with one another or a reference number
- to give information about general trends
- to help make comparisons and judgements

It is often calculated as a weighted sum of various factors resulting in a single summary number.

The Fan Cost Index (FCI), complied by Team Marketing Report, tracks the cost for a **family of four** to attend a professional sporting event. The FCI includes the prices of:

- 2 average-price adult tickets
- 2 average-price child tickets
- 4 small soft drinks
- 2 small other drinks
- 4 regular-size hot dogs
- 1 parking fee
- 2 game programs
- 2 least expensive adult-size adjustable caps

The Average Ticket Price in the following table [illegible] FAN COST INDEX

Team	Avg. Ticket Price	Soft Drink (size in oz.)	Other Drink	Hot Dog	Parking	Program	Cap	FCI
VIKINGS	50.00	7.00 (25)	25.00	5.00	50.00	16.00	20.00	420
49ERS	40.00	5.00 (25)	20.00	10.00	80.00	15.00	20.00	410
REDSKINS	40.00	8.00 (25)	20.00	10.00	60.00	10.00	40.00	432
TEXANS	50.00	6.00 (25)	15.00	5.00	60.00	5.00	10.00	364

Which team had the lowest FCI? Texans

FCI

Vikings: $4(50) + 4(7) + 2(25) + 4(5) + 50 + 2(16) + 2(20) = 420$

49ers: $4(40) + 4(5) + 2(20) + 4(10) + 80 + 2(15) + 2(20) = 410$

Redskins: $4(40) + 4(8) + 2(20) + 4(10) + 60 + 2(10) + 2(40) = 432$

Texans: $4(50) + 4(6) + 2(15) + 4(5) + 60 + 2(5) + 2(10) = 364$