

11/19

# 5.1 Classified Ads

Autos

mint/immaculate: excellent condition

K: 1,000 miles

Loaded: many options

Neg: price is negotiable

Firm: not gonna change price

Sacrifice: sell quickly at less than lower value.

A/C air conditioning

auto automatic

cruise cruise control

CD <sup>Aux:</sup> compact disk  
~~auxiliary~~ chord/port

6 cylo 6 cylinders

dr # doors

Lthr leather interior

p/ant power antenna

p/locks power locks

p/mirrors

power mirrors

p/seats

power seats

p/win

power windows

ps

power steering

p/w

power Wipers



Ex1

\$ 7400 sales tax 8.5%

$$\begin{array}{r}
 7400 \\
 \times .085 \\
 \hline
 \$ 628.00 \\
 \text{tax} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 7400 \\
 + 628 \\
 \hline
 \$ 8028 \text{ total}
 \end{array}$$

Ex2

5 line ad.

\$ 31 - 2 lines

\$ 6 - each extra line

\$ 31 } 

\$ 6 \_\_\_\_\_  
 \$ 6 \_\_\_\_\_  
 \$ 6 \_\_\_\_\_

$$\begin{array}{r}
 31 \\
 + 18 \\
 \hline
 \$ 49.00 \text{ ad}
 \end{array}$$

# 11/23 5.2 Buy or Sell a Car

Statistics: list of prices  
data on vehicle  
typical condition  
average price

mean: average  $\left( \frac{\text{total sum}}{\text{amount of choices}} \right)$

median: middle # least to greatest

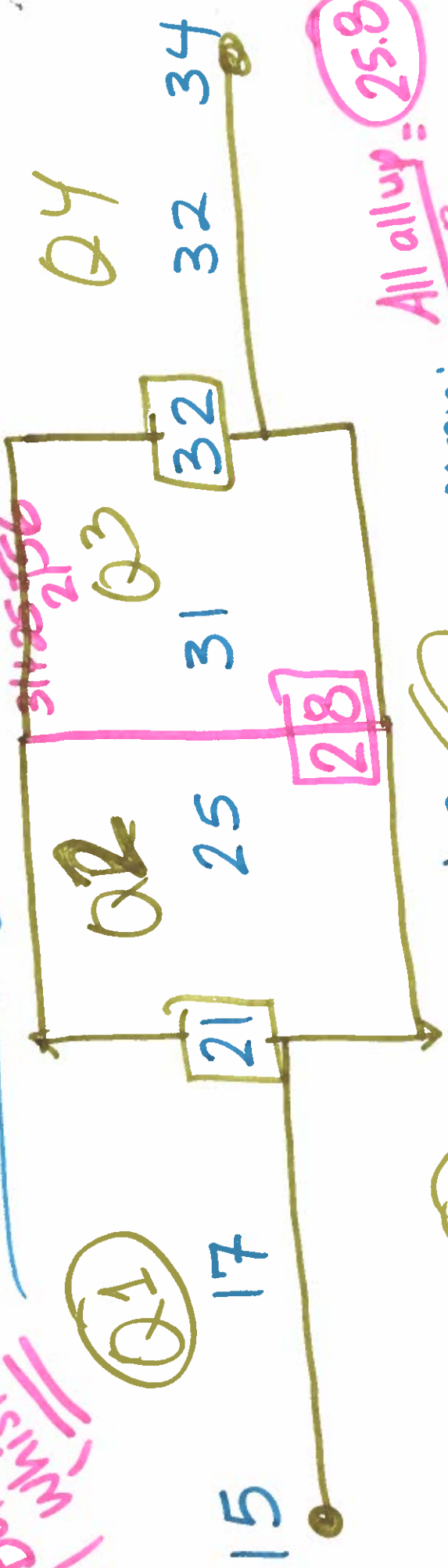
outlier: not normal #

range: highest minus lowest

mode: # occurs most often.

Box n whisker

In thousands of dollars... least to greatest



Q1

Q2

Q3

Q4

Quartile 1 Q1

Quartile 3 Q3

Quartile 2 Q2

Quartile 4 Q4

All ally =  $\frac{25.8}{8}$

Mean: \_\_\_\_\_

Median: 28

Mode: 32

Range: \_\_\_\_\_

Interquartile range:  $Q3 - Q1$

$= 32 - 21 = 11$

~~34 - 15~~  
19

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# 5.4 Auto Insurance

Liable: responsible to pay for damages

auto insurance: Contract between driver & carrier.

negligence: at fault (you are wrong)

premium: fee for insurance

Liability insurance: minimum required by the state.

Bodily Injury: (BI) covers bodily injuries,

medical

\* you must pay medical bills for all!

Property Damage (PD)

Liability:

property

Covers damage you cause to others' property.

Uninsured / Underinsured:

→ other driver no insurance or underinsured.

Personal Injury Protection: (PIP)

your car

Compensates you and your passengers

Comprehensive: replaces glass (windshield)



Collision Insurance: for new cars that are financed.

Covers vehicle no matter who is at fault.

Car-Rental: pay for rental car

Emergency Road side service: towing, tire repair, battery

Deductable: amount policy owner must pay before insurance pays.

\$ 500 - \$ 1500

# Example:

200/300/200 (In thousands of dollar)

max per person per accident of ~~the~~ car people

max for all people in accident my car

max property damage property

- No comprehensive
- Roadside assist.
- Undrinsured  
↑ 200,000 coverage

Premium 6 months

6 | \$ 381.<sup>00</sup>

9 66.50 per month  
1999 car

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# 5.7 Driving Data

Odometer: mileage of the car

Trip odometer: set trip/vacation

Speedometer: rate of speed/hour

miles per gallon: travel on 1 gallon of fuel.

1 Kilometer  $\approx$  0.621371 mile

1 mile  $\approx$  1.60934 Kilometer

Distance formula: Distance = Rate  $\times$  Time

2019 = 19.4

1 dollar = 13.3 Pesos

$$D = RT$$

1 dollar = .90 Euro

**Ex1** 50mph for 6hrs.

$$D = R \times T$$
$$D = 50 \cdot 6 = 300 \text{ miles}$$

**Ex2** 883 miles ave. 60mph

$$\frac{883}{60} = \frac{60 \cdot T}{60}$$
$$T = 14.7 \text{ hours}$$

$$.7 \times 60 = 43 \text{ minutes}$$

14 hours : 43 minutes

Ex 3

176 miles  
NY to Canada  
border

65 km

Canada border to Montreal

$$65 \cdot 0.621371$$

$$= 40.389 \text{ miles}$$

$3\frac{3}{4}$  hours time

$$\begin{array}{r} 176.000 \\ + 40.389 \\ \hline \end{array}$$

216.4 miles distance

$$D = R \times T$$

~~216.4 = R \cdot 3.75~~  
~~3.75 \cdot R = 216.4~~  
~~R = \frac{216.4}{3.75}~~

~~216.4~~  
~~3.75~~  $R =$

$$\frac{216.4}{3.75} = R \cdot \frac{3.75}{3.75}$$

$R = 58 \text{ mph}$

Ex4

40 miles per gallon  
x 12 gallon tank

480 miles

Ex5

23,787.8 miles  
24,108.6 miles

320.8 miles traveled

10.025 gallons

32 mph

32 | 320.8

40.10 fill up  
10.025 gallon

\$4 a gallon

Ex 6

8.50 Mexican pesos per liter

1 USD = 19.9 pesos

$8.50 \div 19.9 \approx 0.42$  per liter

3.8 Liters per gallon  $\times 0.42$

= \$1.59 per gallon

Assign:  
pgs. 265-266  
# 2, 5, 7, 8, 10

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# 5.8 Driving Safety Data

reaction time or thinking time: time it takes a driver to react to a situation.

reaction distance: the distance the car moves until the reaction takes place.

braking distance: distance car takes to stop when brakes applied.

total stopping distance: moment a driver realizes need to stop versus actual stopping distance.



•  $5280 \text{ ft} = 1 \text{ mile}$

55 mi/hr, in a second you  
travel  $\approx$  81 ft

Braking Distance

Formula =

$S = \text{speed}$

$$\frac{S^2}{20}$$

Ex 1 48 mph

55 mph = 81 ft

Reaction time = 0.75 = 1.5 seconds

median # middle #

81/1 = x/0.75  
60.75 ft = x

81/1 = x/1.5  
121.5 ft = x

121.5  
+ 60.72  
-----  
182.25  
ft  
91.125

1 foot for each mile of speed under 55 mph

48 mph = 48 ft reaction time

Ex 2

$$\frac{S^2}{20}$$

48mph

$$(0.1 \times S)^2 \times 5 =$$

$$\left(\frac{1}{10} \cdot S\right)^2 \times 5$$

$$\left(\frac{S}{10}\right)^2 \times 5$$

$$\frac{S^2}{100} \cdot 5 = \frac{5S^2}{100} = \frac{S^2}{20}$$

FORMULA

$$\frac{S^2}{20} = \frac{(48^2)}{20} = \frac{2304}{20}$$

$$= 115.2 \text{ ft}$$

(i) 48 mph

200 ft away

Total stopping Distance = reaction time + braking distance

$$TSD = 48 \text{ ft} + 115.2 \text{ ft} = 163.2 \text{ ft}$$

yes

Assignment

pgs. 272-273  
# 2, 7, 8, 9

12/2/19 | 5.9 Accident Investigation  
Data

Accident Reconstructionists:

Scene investigators  
; mathematicians  
that help people  
understand the  
accident.

Skid mark: mark a tire leaves  
on the road when  
Locks tires with brakes.

Shadow  
Skid mark:

first part of the  
skid mark.

Anti-lock  
Brakes (ABS): does not lock  
or skid when  
braked.

yaw marks: When vehicle is slipping sideways  
! skid mark is curved.

Skid speed formula:

$$S = \sqrt{30 \cdot d \cdot f \cdot n}$$

S = speed

d = skid distance

f = drag factor

n = braking efficiency

30 - amount of friction that the contributes when driving

Skid distance: number : lengths  
of skid marks left  
at the surface.

<u>Road Surface</u> :	<u>Drag Factor</u>
Cement	0.55 - 1.22
Asphalt	0.50 - 0.90
Gravel	0.40 - 0.80
Snow	0.10 - 0.55
Ice	0.10 - 0.25

$$S = \sqrt{30 \cdot d \cdot f \cdot n}$$

Asphalt  
 $f \Rightarrow .78$  drag factor

35mph - speed  
Limit

①  $\rightarrow$  100% brakes

$$S = \sqrt{30 \cdot 80 \cdot .78 \cdot 1}$$

$d = 80$  ft skid  
marks

$$S = \sqrt{1872}$$

$S = 43.3$  mph  
yes, ticket yes



$$S = \sqrt{30 D f n}$$

50 mph

$f \rightarrow$  concrete 1.2

$n =$  90% brakes

$$50 = \sqrt{30 D \cdot 1.2 \cdot 0.9}$$

Skid  
distance  $D$

$$50 = \sqrt{30 \cdot D \cdot 1.2 \cdot 0.9}$$

$$(50)^2 = (\sqrt{32.4 D})^2$$

$$\frac{2500}{32.4} = \frac{32.4 \cdot D}{32.4}$$

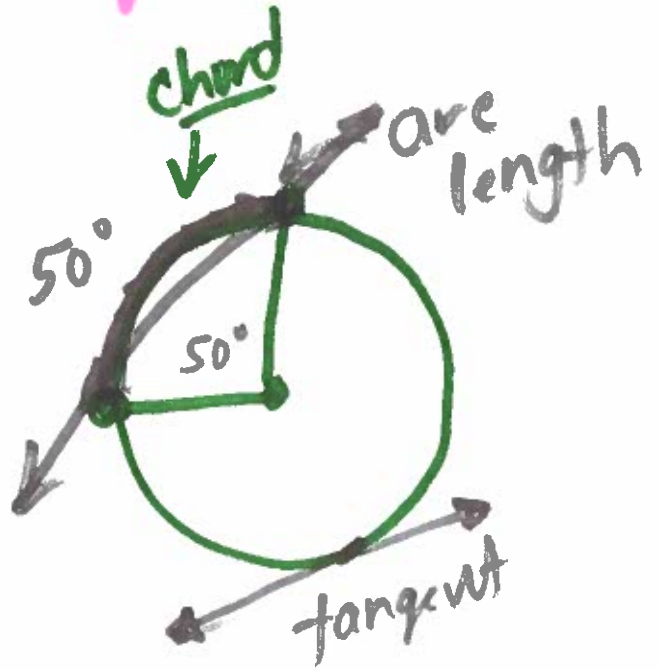
$$D = 77.2 \text{ ft}$$

\* Straight  
Skid

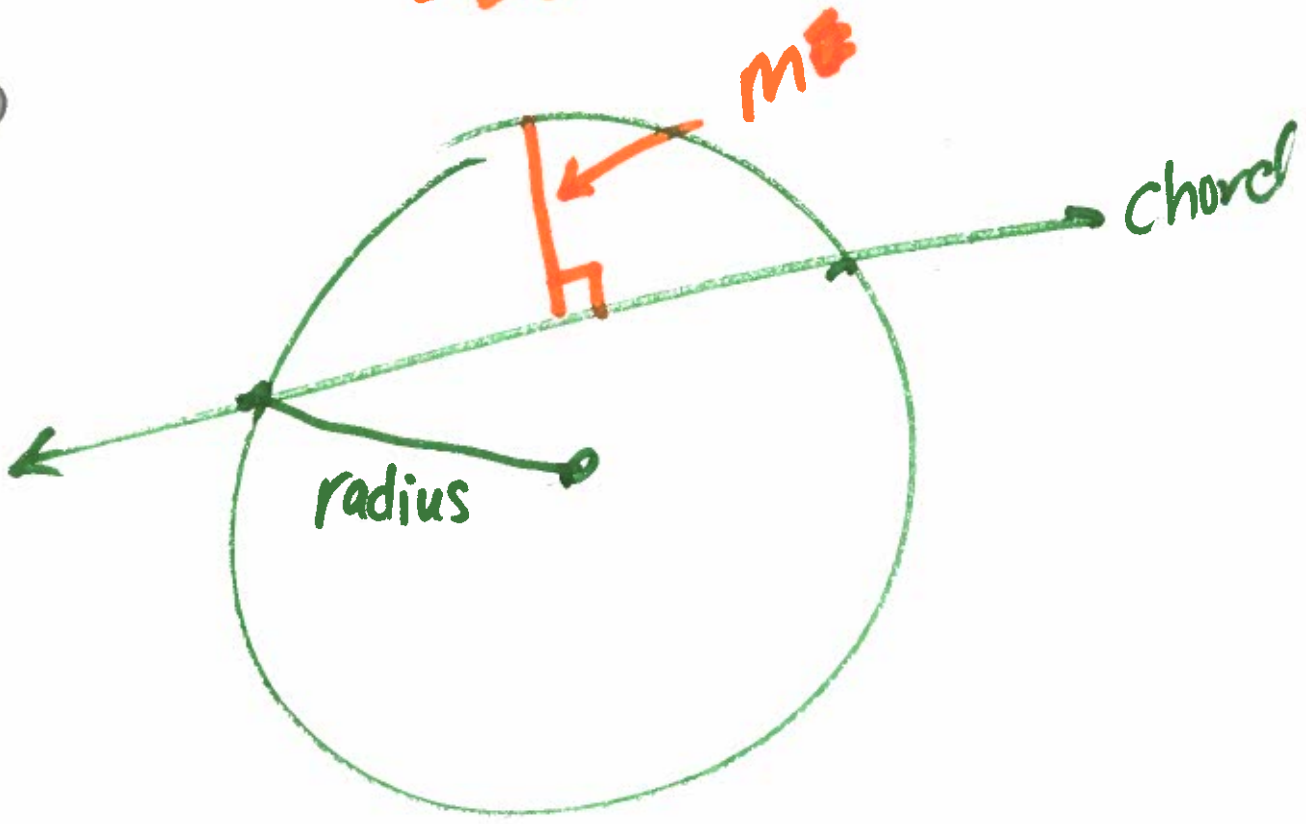
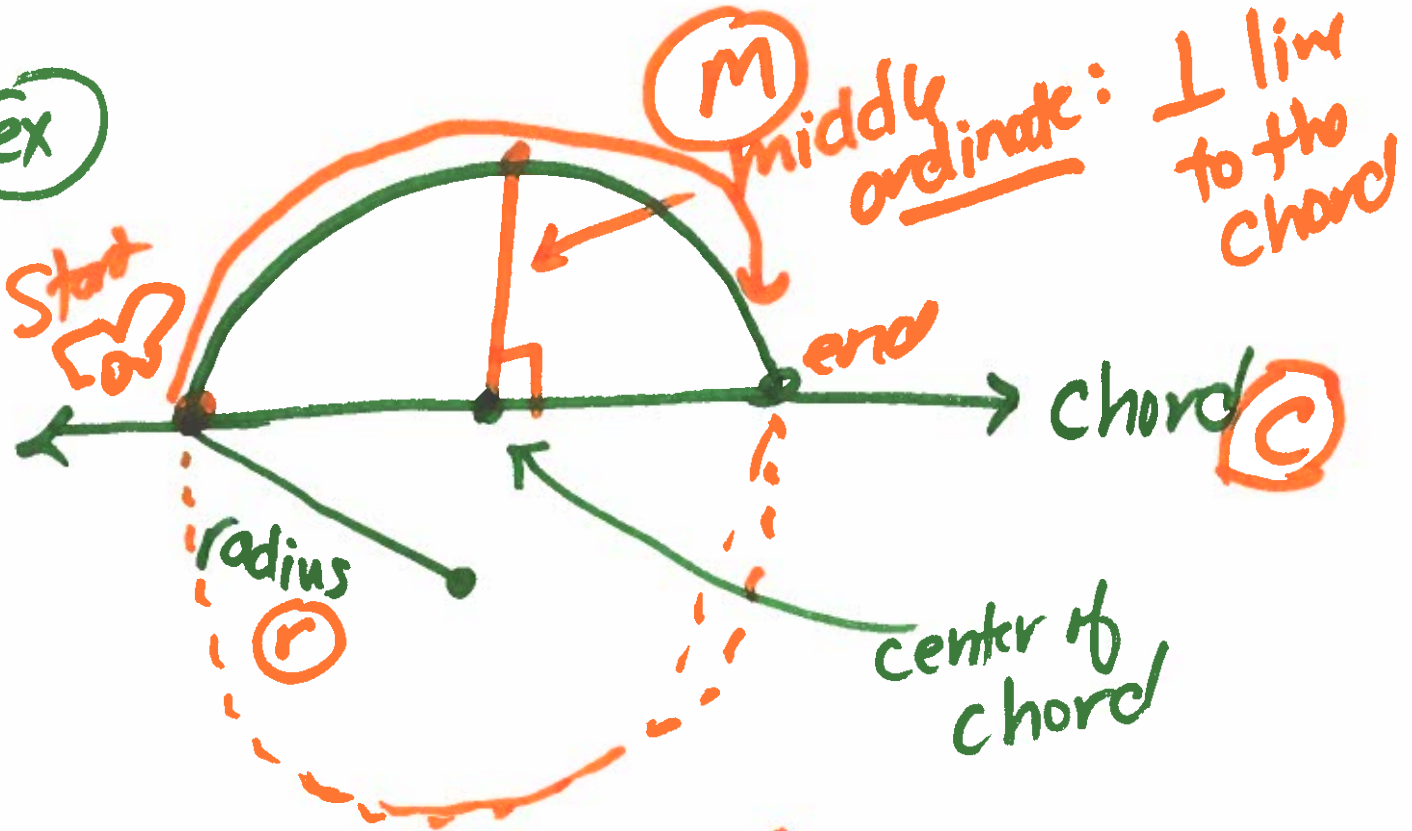
# Yaw Marks (curved skid)

FORMULA:  $S = \sqrt{15f \cdot R}$

$S$  = speed  
 $f$  = drag factor  
 $r$  = radius of the arc of curve



ex

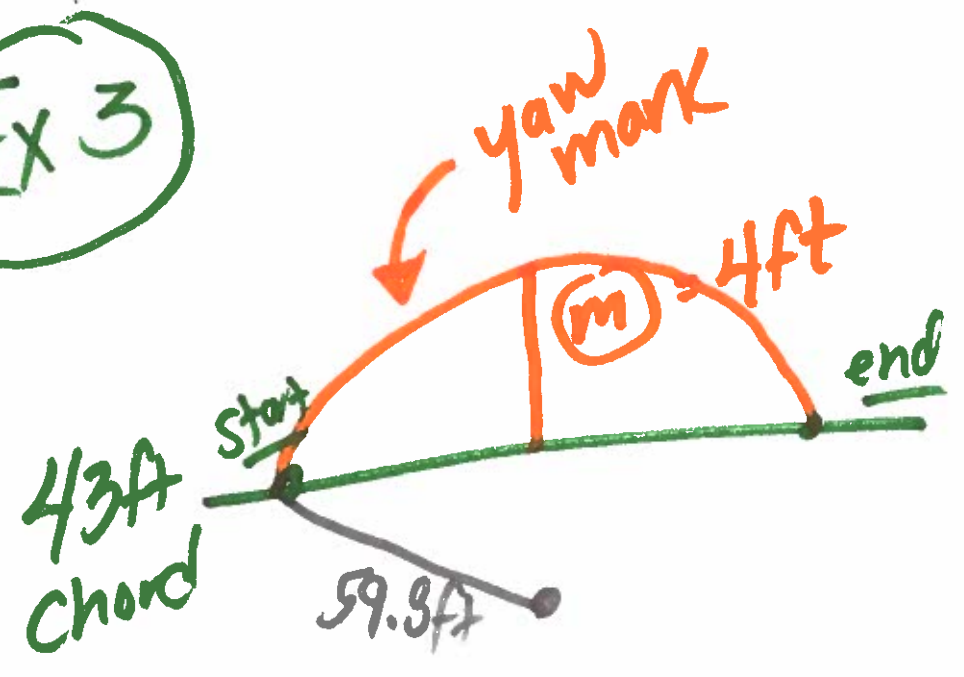


# FORMULA

$$r = \frac{c^2}{8M} + \frac{M}{2}$$

- $C$  = chord
- $M$  = middle ordinate *makes*  $(90^\circ)$  *angl*

Ex 3



drag factor: 0.8

① Find radius

$$r = \frac{C^2}{8m} + \frac{m}{2}$$

$$r = \frac{(43)^2}{8(4)} + \frac{4}{2}$$

$$r = \frac{(43)^2}{32} + 2$$

$$r = 59.8 \text{ ft}$$

(2) Speed (yaw mark)

$$S = \sqrt{15fR}$$

$f$  = drag factor

$$S = \sqrt{(15) \cdot (0.8) \cdot (59.8)}$$

$R$  = radius

$$S = 26.8 \text{ mph}$$

Assign:

pgs. 279-281

# 2-5, 7, 9, 12,  
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