3b. $n \times p$

$.21(1200) = 252$ students

6.

| color | red | Yellow | blue | Green |
|---|---|---|---|---|
| freq | .4 | $y=.10$ | .3 | $2y=.20$ |

$.4 + y + .3 + 2y = 1$

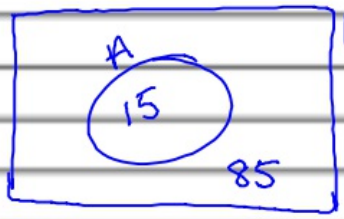
$3y + .7 = 1$

$3y = .3$

$y = .10$

| Questions: | Notes: 3-2 Venn Diagrams 12/13/16 |
|---|---|

- Example
  100 students
  15 are in AVID




A = students in Avid
$n(A) = 15$

choose a student at Random.
what is the prob. the student is in AVID?

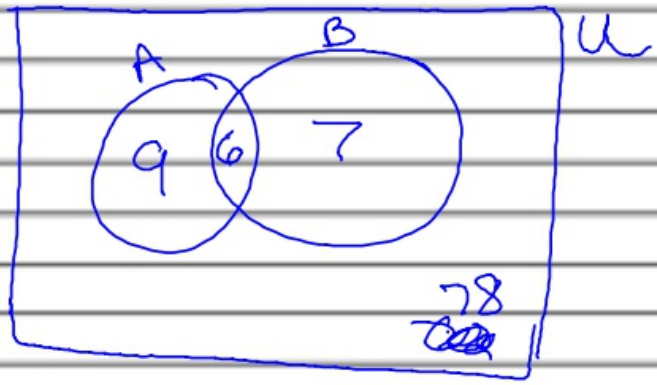
$$P(A) = \frac{n(A)}{n(U)} = \frac{15}{100} = \frac{3}{20}$$

Complement of A
not A = A'
choose a student that's not in Avid
$P(A')$

Two ways: $P(A) + P(A') = 1$

① $P(A') = 1 - P(A) = 1 - \frac{3}{20}$
$= \frac{17}{20}$

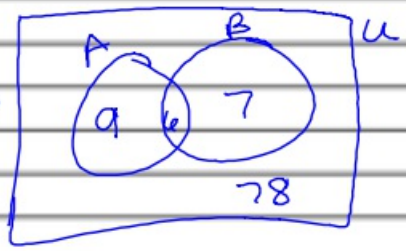
② $P(A') = \frac{n(A')}{n(U)} = \frac{85}{100} = \frac{17}{20}$

| Questions: | Notes: |
|---|---|
| | Intersection of Events |
| | $U$ = 100 students<br>$A$ = 15 students<br>$B$ = 13 students are full Diploma also have 6 in AVID and are DP |
| |  |
| | $n(A) = 15$<br>$n(B) = 13$<br>$n(A \cap B) = 6$<br>Intersection: and $\cap$ |
| | * When filling out Venn Diagram work from the inside → out. |
| | $P(A \cap B) = \frac{6}{100} = \frac{3}{50}$ |
| | $B'$ = students who are not full Diploma students<br>$n(B') = 87$<br>$n(A \cap B') = 9$ |
| | $A'$ = full DP, not AVID<br>$n(A' \cap B) = 7$ |

| Questions: | Notes: |
|---|---|

A = AVID

B = full DP




$n(A) = 15$ $n(A \cap B) = 6$ Both and

$n(B) = 13$

in AVID, not DP $n(A \cap B') = 9$

full DP, not AVID $n(A' \cap B) = 7$

not AVID $n(A') = 100 - 15 = 85$

not DP $n(B') = 87$

not AVID nor DP $n(A' \cap B') = 78$

$100 - n(A \cup B) = 78$

In AVID or DP

$n(A) = 15$

$n(B) = 13$

Addition Rule

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

subset → $A \subset U$

Ex) #3 $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$

a.

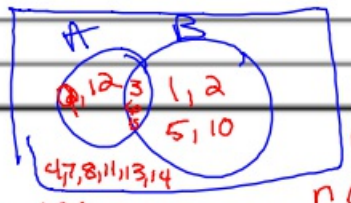
$A = \{$ multiples of 3 $\}$

$B = \{$ factors of 30 $\}$

$A = \{3, 6, 9, 12, 15\}$

$B = \{1, 2, 3, 5, 6, 10, 15\}$

b.




$n(A) = 5$

$n(B) = 7$

$n(A \cap B) = 3$

$n(A \cup B)' = 6$

$n(U) = 15$

$\{A' \cap B'\}$

$\{A \cup B\}'$

$P(A) = \frac{n(A)}{n(U)}$

c. $P(A \cap B) = \frac{3}{15} = \frac{1}{5}$

d. $P(A' \cap B') = \frac{6}{15} = \frac{2}{5}$

| Questions: | Notes: |
| --- | --- |
| | Ex) If two events A and B have probabilities |
| | $P(A) = \frac{9}{20}$ $P(B) = \frac{3}{10}$ |
| | and $P(A \cup B) = 2\,P(A \cap B) = 2x$ |
| | find a. $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ |
| | Let $P(A \cap B) = x$ |
| | $2x = P(A) + P(B) - x$ |
| | $x = \frac{1}{4}$ |
| | $P(A \cup B) = 2(\frac{1}{4}) = \frac{1}{2}$ |
| | Hw 3B p. 71-72, #1-4, 6 |
| | 3C p. 74, 1, 3, 4, 5, 7 |