① $P(4,2) = 12$

③ $P(6,3) = 120$

⑤ $C(10,3) = 120$

⑦ $C(5,4) = 5$

⑨ $P(7,1) = 7$

Use your calculator.

(27) ordered selection

$$\boxed{4} \times \boxed{3} \times \boxed{2} \times \boxed{1} = 24$$

- $\boxed{4}$: # of options for 1st person
- $\boxed{3}$: 2nd person
- $\boxed{2}$: 3rd person
- $\boxed{1}$: 4th person

Note: This could be written as $P(4,4)$ or $4!$

(33) $40 \times 39 \times 38 \times 37 \times 36$

40: # of options for team ranked 1st; 39: team ranked 2nd; 38: 3rd; 37: 4th; 36: 5th

$= 78,960,960$

Note: This could be written as $P(40,5)$

(35) Unordered selection

$C(10,5) = 252$

(37) Unordered selection

# of possible samples

$= C(100,3)$

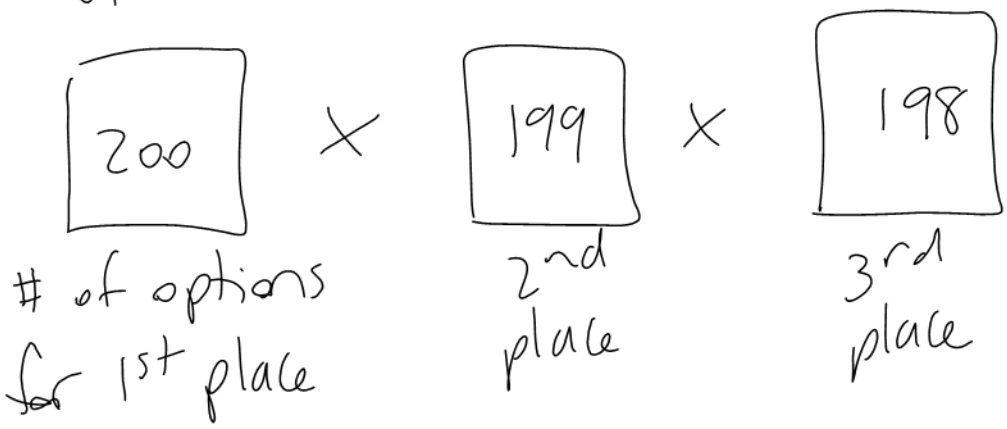
$= 161,700$

# of samples with all defective DVDs

$= C(7,3)$ ← choose 3 from the 7 defective DVDs

$= 35$

(39) ordered selection



$= 7,880,400$

This could be written as $P(200,3)$

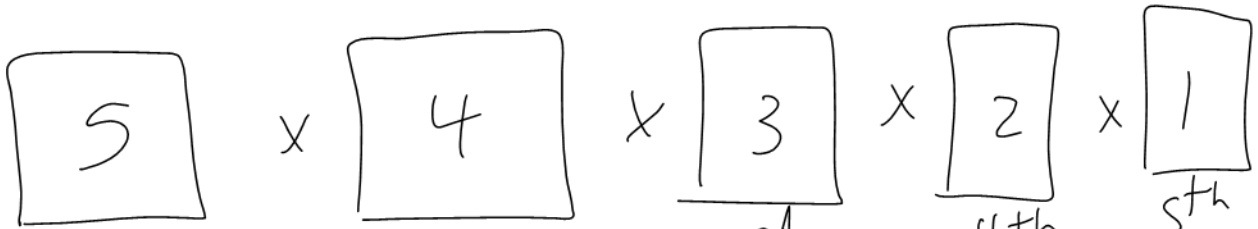
(41) Unordered selection

$C(52,5) = 2,598,960$

(43) unordered selection

$C(13,5) = 1287$ ← choose 5 of the 13 clubs

(45) ordered selection



# of choices for who gets 1st sandwich

# of choices for who gets 2nd sandwich

3rd sandwich

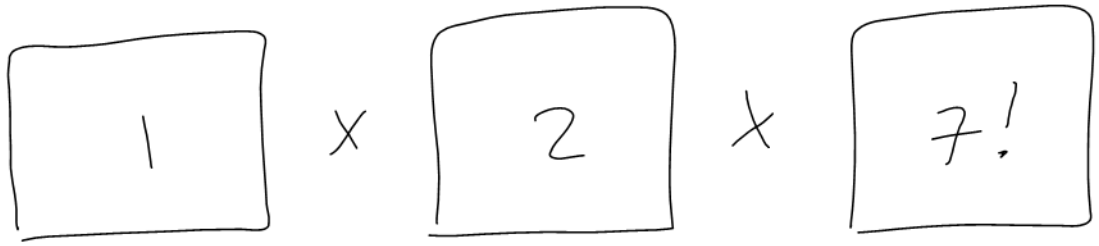
4th sandwich

5th sandwich

$= 120$

This could be written as $P(5,5)$ or $5!$

(51)



# of choices for pitcher's spot

# of choices for first baseman's spot

# of ways to put the other 7 people in order

$= 10,080$

This could also be written as

$2 \times P(7,7)$

or $2 \times (7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1)$

(57) ordered selection

$P(4,3)$ # of ways to select 3 freshmen in order

$\times$ $P(5,3)$ # of ways to select 3 sophomores in order

$\times$ $P(6,3)$ select 3 juniors in order

$\times$ $P(7,3)$ select 3 seniors in order

$\times$ $4!$ # of ways to order the 4 groups

e.g. J-F-Soph-Sen
or
Sen-F-Soph-J
etc.

$= 24 \times 60 \times 120 \times 210 \times 24$

$= 870,912,000$