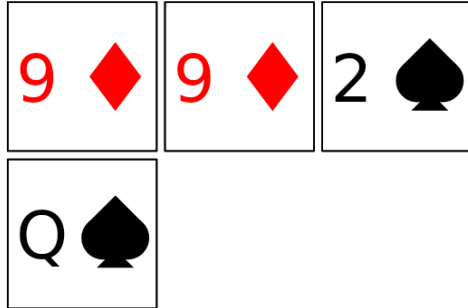




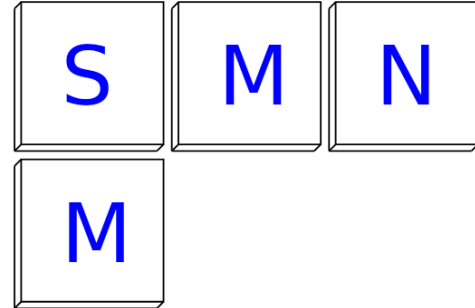
Probability and Statistics - Binomial Notation Intro

- 1 How many distinct ways can these cards be ordered? Show as a factorial.



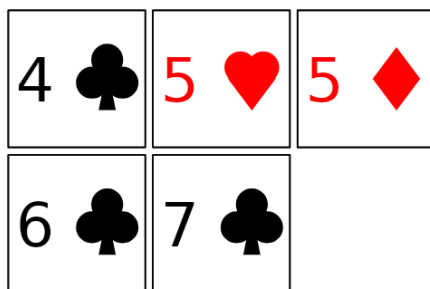
A	$\frac{3!}{2!}$	B	$\frac{4!}{4! \cdot 0!}$
C	$\frac{4!}{2! \cdot 2!}$	D	$\frac{4!}{2!}$
E	$\frac{5!}{2!}$	F	$\frac{6!}{2!}$

- 2 How many distinct ways can these letter tiles be ordered? Show as a factorial.



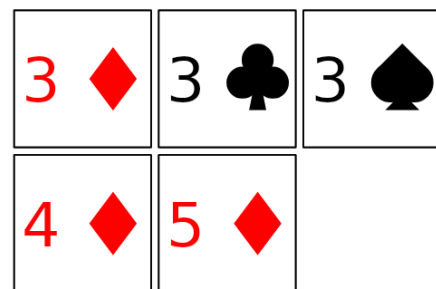
A	$\frac{4!}{4! \cdot 0!}$	B	$\frac{4!}{2! \cdot 2!}$
C	$\frac{6!}{3! \cdot 2!}$	D	$\frac{4!}{2!}$
E	$\frac{3!}{2!}$	F	$\frac{6!}{2! \cdot 2!}$

- 3 How many ways can these cards be arranged to still be arranged smallest to largest? Show as a multiplication.



A	$2 \cdot 3 \cdot 2$	B	$2 \cdot 2$
C	$4 \cdot 3 \cdot 2$	D	$\frac{2}{2 \cdot 1}$
E	$\frac{1}{2 \cdot 1}$	F	2

- 4 How many ways can these cards be arranged to still be arranged smallest to largest? Show as a factorial.

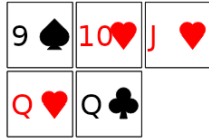


A	$3! \cdot 2!$	B	$5!$
C	$3! \cdot 3!$	D	$3!$
E	$\frac{1}{3! \cdot 1!}$	F	$\frac{2!}{3! \cdot 1!}$



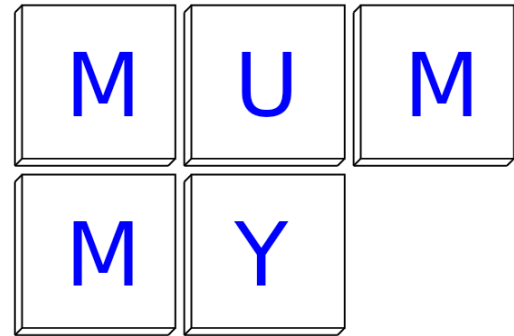
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- 5 How many ways can these cards be arranged to still be arranged smallest to largest?



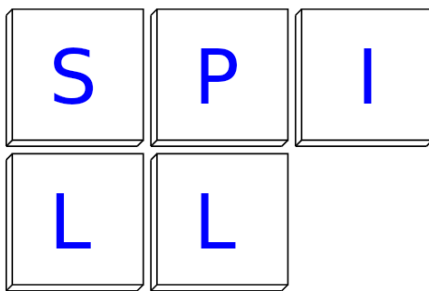
A	2	B	4	C	12
D	24	E	6		

- 6 How many ways can these letter tiles be ordered to spell 'MUMMY'? Show as a multiplication.



A	$5 \cdot 4 \cdot 3 \cdot 2$	B	$\frac{2}{3 \cdot 2 \cdot 1}$
C	$3 \cdot 2 \cdot 3 \cdot 2$	D	$4 \cdot 3 \cdot 2$
E	$3 \cdot 2$	F	$\frac{1}{3 \cdot 2 \cdot 1}$

- 7 How many ways can these letter tiles be ordered to spell 'SPILL'? Show as a factorial.



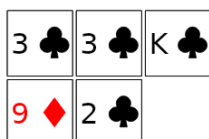
A	$\frac{2!}{2! \cdot 1!}$	B	$\frac{1}{2! \cdot 1!}$
C	$3!$	D	$2! \cdot 2!$
E	$2!$	F	$4!$

- 8 How many ways can these letter tiles be ordered to spell 'GRASS'?



A	24	B	2	C	4
D	12	E	6		

- 9 How many distinct ways can these cards be ordered?



A	13	B	60	C	3
D	0	E	5	F	12

- 10 How many distinct ways can these letter tiles be ordered?

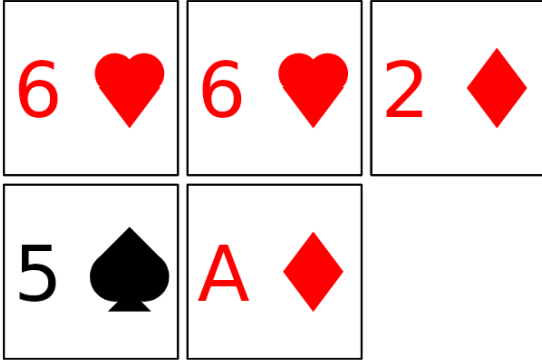


A	7	B	3	C	60
D	0	E	13	F	5



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11 How many distinct ways can these cards be ordered? Show as a multiplication.



A $\frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{2}$

B $\frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2 \cdot 2}$

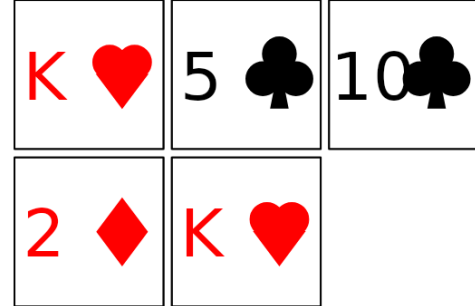
C $\frac{5 \cdot 4 \cdot 3 \cdot 2}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$

D $\frac{5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2}$

E $\frac{5 \cdot 4 \cdot 3 \cdot 2}{4 \cdot 3 \cdot 2}$

F $\frac{5 \cdot 4 \cdot 3 \cdot 2}{2}$

12 How many distinct ways can these cards be ordered? Show as a factorial.



A $\frac{5!}{2! \cdot 3!}$

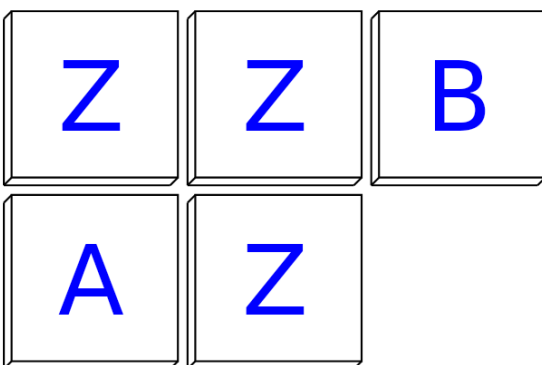
B $\frac{5!}{2!}$

C $\frac{5!}{2! \cdot 2!}$

D $\frac{7!}{2!}$

E $\frac{5!}{5! \cdot 0!}$

13 How many distinct ways can these letter tiles be ordered? Show as a multiplication.



A $\frac{5 \cdot 4 \cdot 3 \cdot 2}{4 \cdot 3 \cdot 2}$

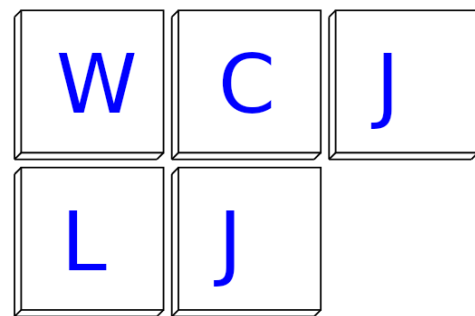
B $\frac{5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2}$

C $\frac{5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2 \cdot 3 \cdot 2}$

D $\frac{5 \cdot 4 \cdot 3 \cdot 2}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$

E $\frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2}$

14 How many distinct ways can these letter tiles be ordered? Show as a factorial.



A $\frac{5!}{2!}$

B $\frac{5!}{4!}$

C $\frac{3!}{2!}$

D $\frac{5!}{5! \cdot 0!}$

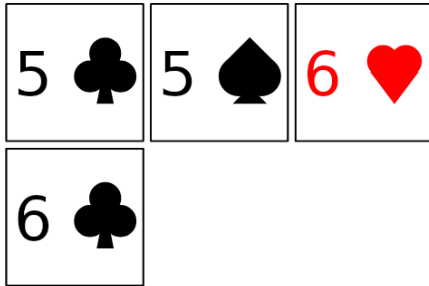
E $\frac{5!}{2! \cdot 3!}$

F $\frac{5!}{3!}$



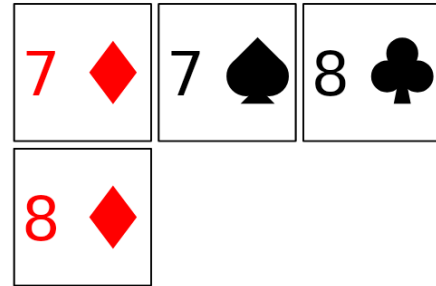
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15 How many ways can these cards be arranged to still be arranged smallest to largest? Show as a multiplication.



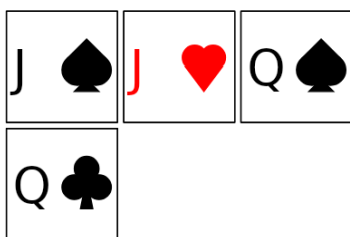
A	$2 \cdot 3 \cdot 2$	B	$\frac{1}{2 \cdot 2}$
C	$2 \cdot 4 \cdot 3 \cdot 2$	D	$2 \cdot 2$
E	$\frac{2}{2 \cdot 2}$	F	$4 \cdot 3 \cdot 2 \cdot 2$

16 How many ways can these cards be arranged to still be arranged smallest to largest? Show as a factorial.



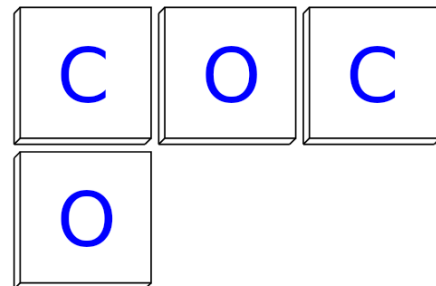
A	$2! \cdot 4!$	B	$2! \cdot 2!$
C	$2! \cdot 3!$	D	$\frac{1}{2! \cdot 2!}$
E	$3! \cdot 2!$	F	$\frac{2!}{2! \cdot 2!}$

17 How many ways can these cards be arranged to still be arranged smallest to largest?



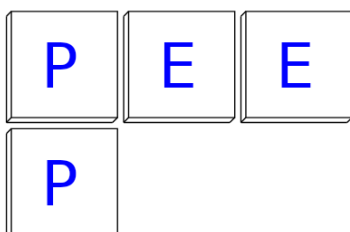
A	12
B	48
C	4

18 How many ways can these letter tiles be ordered to spell 'COCO'? Show as a multiplication.



A	$3 \cdot 2 \cdot 2$	B	$\frac{1}{2 \cdot 2}$
C	$4 \cdot 3 \cdot 2 \cdot 2$	D	$2 \cdot 2$
E	$2 \cdot 3 \cdot 2$	F	$\frac{2}{2 \cdot 2}$

19 How many ways can these letter tiles be ordered to spell 'PEEP'?

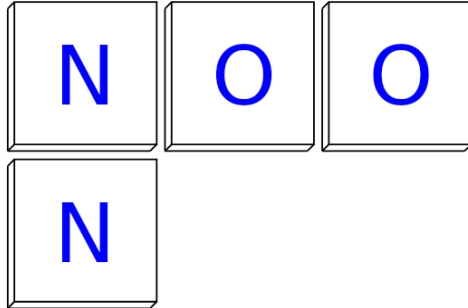


A	12
B	48
C	4



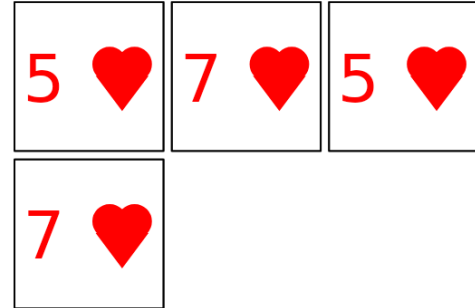
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20 How many ways can these letter tiles be ordered to spell 'NOON'? Show as a factorial.



A	$4! \cdot 2!$	B	$3! \cdot 2!$
C	$2! \cdot 2!$	D	$\frac{1}{2! \cdot 2!}$
E	$2! \cdot 4!$	F	$\frac{2!}{2! \cdot 2!}$

21 How many distinct ways can these cards be ordered? Show as a multiplication.



A	$\frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2 \cdot 2 \cdot 2}$	B	$\frac{4 \cdot 3 \cdot 2}{3 \cdot 2 \cdot 2}$
C	$\frac{4 \cdot 3 \cdot 2}{2 \cdot 2}$	D	$\frac{3 \cdot 2}{2 \cdot 2}$
E	$\frac{4 \cdot 3 \cdot 2}{4 \cdot 3 \cdot 2 \cdot 1}$	F	$\frac{4 \cdot 3 \cdot 2}{2 \cdot 3 \cdot 2}$

22 Select the correct formula for this notation
 ${}_4P_3$

A	$\frac{4!}{3! \cdot 1!}$	B	$\frac{4!}{1!}$
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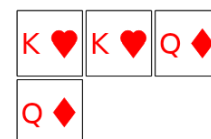
23 Select the correct value for when this notation is calculated
 ${}_5P_4$

A	$\frac{120}{1}$	B	$\frac{120}{24}$
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24 Select the correct notation for this formula
 $\frac{5!}{1!}$

A	${}_5P_4$	B	${}_5C_4$
C	${}_5B_4$		

25 How many distinct ways can these cards be ordered?

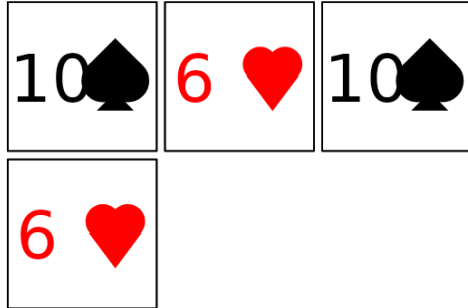


A	10	B	0	C	4
D	6	E	2	F	8



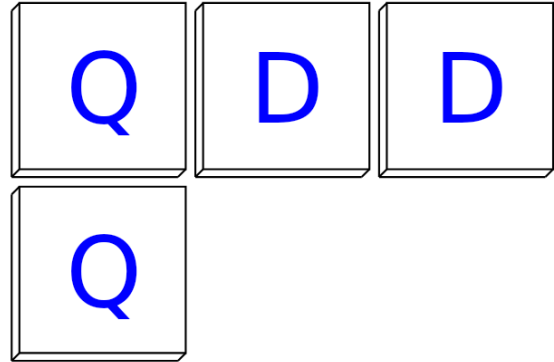
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26 How many distinct ways can these cards be ordered? Show as a factorial.



- | | |
|-------------------------------------|----------------------------|
| A $\frac{4!}{4! \cdot 2!}$ | B $\frac{4!}{4! \cdot 0!}$ |
| C $\frac{6!}{3! \cdot 2! \cdot 2!}$ | D $\frac{4!}{2! \cdot 3!}$ |
| E $\frac{4!}{3! \cdot 2!}$ | F $\frac{4!}{2! \cdot 2!}$ |

27 How many distinct ways can these letter tiles be ordered? Show as a multiplication.



- | | |
|---|---|
| A $\frac{4 \cdot 3 \cdot 2}{4 \cdot 3 \cdot 2 \cdot 1}$ | B $\frac{4 \cdot 3 \cdot 2}{3 \cdot 2 \cdot 2}$ |
| C $\frac{4 \cdot 3 \cdot 2}{2 \cdot 3 \cdot 2}$ | D $\frac{4 \cdot 3 \cdot 2}{2 \cdot 2}$ |
| E $\frac{4 \cdot 3 \cdot 2}{4 \cdot 3 \cdot 2 \cdot 2}$ | |

28 Select the correct description for this notation ${}_4P_2$

$${}_4P_2$$

- A With a group of 2 items, if you choose 4 in a specific order, how many permutations are possible?
- B From a group of 4 items select a set of 2 items regardless of order.
- C From a group of 4 options how many ways are there to choose 2 options in a specific order?

29 Select the correct value for when this formula is calculated $\frac{5!}{2!}$

$$\frac{5!}{2!}$$

- | | |
|--------------------|-------------------|
| A $\frac{6}{1}$ | B $\frac{120}{2}$ |
| C $\frac{120}{12}$ | |

30 Select the correct description for this formula $\frac{5!}{3!}$

$$\frac{5!}{3!}$$

- A From a group of 7 items select a set of 4 items regardless of order.
- B With a group of 5 items, if you choose 2 in a specific order, how many permutations are possible?
- C Choose a set of 2 items from a group of 5 total items. Ignore the order.

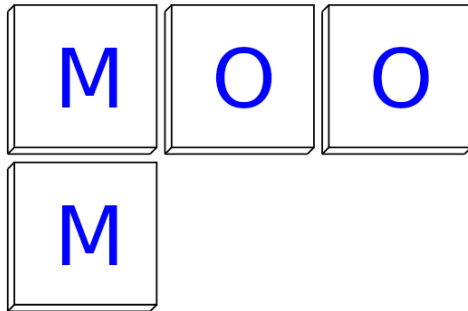
31 Select the correct formula for this description
From a group of 6 options how many ways are there to choose 4 options in a specific order?

- | | |
|----------------------------|-------------------|
| A $\frac{6!}{2!}$ | B $\frac{4!}{2!}$ |
| C $\frac{6!}{4! \cdot 2!}$ | |



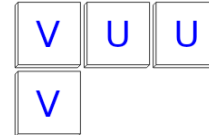
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32 How many distinct ways can these letter tiles be ordered? Show as a factorial.



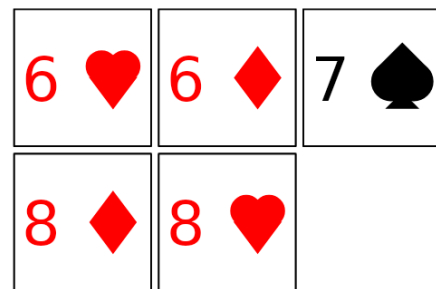
A	$\frac{4!}{4! \cdot 0!}$	B	$\frac{3!}{2! \cdot 2!}$
C	$\frac{4!}{2! \cdot 2!}$	D	$\frac{4!}{2! \cdot 3!}$
E	$\frac{4!}{4! \cdot 2!}$	F	$\frac{4!}{2! \cdot 4!}$

33 How many distinct ways can these letter tiles be ordered?



A	18	B	12	C	5
D	21	E	6	F	0

34 How many ways can these cards be arranged to still be arranged smallest to largest? Show as a multiplication.



A	$2 \cdot 2$	B	$4 \cdot 3 \cdot 2 \cdot 2$
C	$3 \cdot 2 \cdot 2$	D	$2 \cdot 3 \cdot 2$
E	$\frac{1}{2 \cdot 2}$	F	$2 \cdot 4 \cdot 3 \cdot 2$

35 Select the correct notation for this description

Choose 5 options in a specific order from a group of 6 options

A	${}_6P_5$	B	${}_6C_5$
C	${}_6R_5$		

36 Select the correct value for when the described situation is calculated

Choose 2 options in a specific order from a group of 3 options

A	$\frac{6}{1}$	B	$\frac{6}{2}$
C	$\frac{2}{1}$		

37 Select the correct formula for this notation

$${}_6\text{C}_2$$

A	$\frac{2!}{6! \cdot 4!}$	B	$\frac{6!}{4!}$
C	$\frac{6!}{2! \cdot 4!}$		



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- 38** Select the correct value for when this notation is calculated
- $${}_6\text{C}_3$$

A	$\frac{720}{6}$	B	$\frac{720}{48}$
C	$\frac{720}{36}$		

- 39** Select the correct description for this notation
- $${}_6\text{C}_4$$

- A From a group of 7 options how many ways are there to choose 6 options in a specific order?
- B With a group of 6 items, if you choose 4 in a specific order, how many permutations are possible?
- C From a group of 6 items select a set of 4 items regardless of order.

- 40** Select the correct notation for this formula
- $$\frac{4!}{2! \cdot 2!}$$

A	${}_4\text{B}_2$	B	${}_4\text{R}_2$
C	${}_4\text{C}_2$		

- 41** Select the correct description for this formula
- $$\frac{4!}{2! \cdot 2!}$$

- A Choose 2 options in a specific order from a group of 4 options
- B With a group of 4 options how many ways are there to choose a set of 2 options regardless of order?
- C Choose a set of 3 items from a group of 5 total items. Ignore the order.

- 42** Select the correct value for when this formula is calculated
- $$\frac{5!}{2! \cdot 3!}$$

A	$\frac{24}{4}$	B	$\frac{120}{12}$
C	$\frac{120}{6}$		

- 43** Select the correct formula for this description
- Choose a set of 2 items from a group of 4 total items. Ignore the order.**

A	$\frac{4!}{2!}$	B	$\frac{4!}{2! \cdot 2!}$
C	$\frac{3!}{3! \cdot 0!}$		

- 44** Select the correct notation for this description
- With a group of 6 options how many ways are there to choose a set of 3 options regardless of order?**

A	${}_6\text{C}_3$	B	${}_6\text{P}_3$
C	${}_6\text{C}_5$		

- 45** Select the correct value for when the described situation is calculated
- With a group of 3 options how many ways are there to choose a set of 2 options regardless of order?**

A	$\frac{6}{1}$	B	$\frac{6}{2}$
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- 46** With a group of 3 options how many ways are there to choose a set of 2 options regardless of order?

A $\binom{2}{3}$

B $\binom{3}{3}$

C $\binom{3}{2}$

47 $\frac{5!}{2! \cdot 3!}$

A $\binom{5}{2}$

B $\binom{5}{3}$

C $\binom{4}{2}$

- 48** Select the bracket notation that means the same thing as this letter notation
 ${}_3C_2$

A $\binom{4}{2}$

B $\binom{5}{4}$

C $\binom{3}{2}$

- 49** Select the letter notation that means the same thing as this bracket notation
 $\binom{6}{3}$

A ${}_6C_3$

B ${}_6P_3$

- 50** Select the correct formula for this notation
 $\binom{5}{3}$

A $\frac{3!}{5! \cdot 2!}$

B $\frac{5!}{3! \cdot 2!}$

C $\frac{5!}{2!}$

- 51** Select the correct description for this notation
 $\binom{4}{3}$

A Choose 3 options in a specific order from a group of 4 options

B With a group of 4 items, if you choose 3 in a specific order, how many permutations are possible?

C From a group of 4 items select a set of 3 items regardless of order.

- 52** Select the correct value for when this notation is calculated
 $\binom{6}{5}$

A $\frac{120}{12}$

B $\frac{720}{120}$

C $\frac{720}{1}$

- 53** Select the correct equivalent to this factorial
 $\frac{1}{4!}$

A $\frac{1}{60}$

B $\frac{1}{6}$

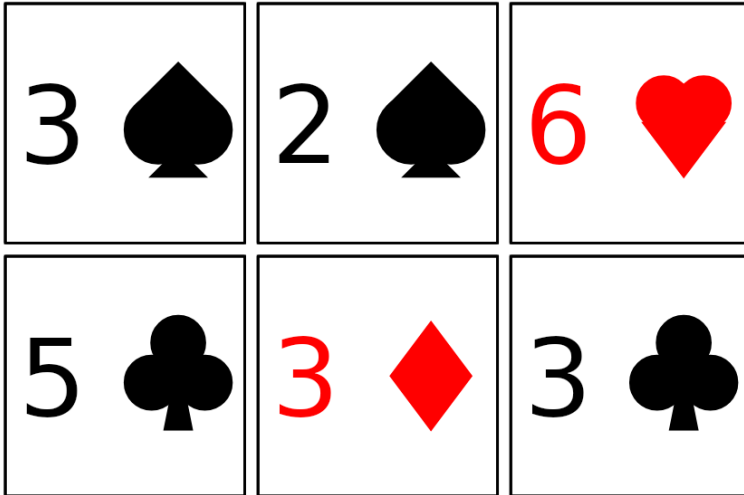
C 120

D 2

E $\frac{1}{24}$

**Probability and Statistics - Binomial Notation Intro**

54 How many total ways can 2 cards be drawn from this set? Show as a factorial.



A

$$\frac{4!}{2! \cdot 2!}$$

B

$$\frac{6!}{4!}$$

C

$$\frac{6!}{2! \cdot 4!}$$

D

$$\frac{2!}{6! \cdot 4!}$$

55 Select the correct equivalent to this factorial

$$6!$$

A

$$5 \cdot 4 \cdot 3 \cdot 2$$

B

$$\frac{1}{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3}$$

C

$$6 \cdot 5 \cdot 4 \cdot 3 \cdot 2$$

D

$$\frac{1}{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4}$$

E

$$7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2$$

56 Select the correct factorial equivalent to this multiplication

$$\frac{1}{3 \cdot 2}$$

A

$$\frac{1}{1!}$$

B

$$\frac{1}{5!}$$

C

$$\frac{1}{4!}$$

D

$$\frac{1}{3!}$$

57 Select the correct factorial equivalent to this

$$\frac{4!}{3!}$$

A

$$1$$

B

$$2$$

C

$$5 \cdot 4$$

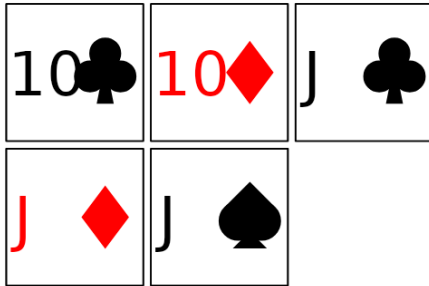
D

$$4$$



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58 How many ways can these cards be arranged to still be arranged smallest to largest? Show as a factorial.



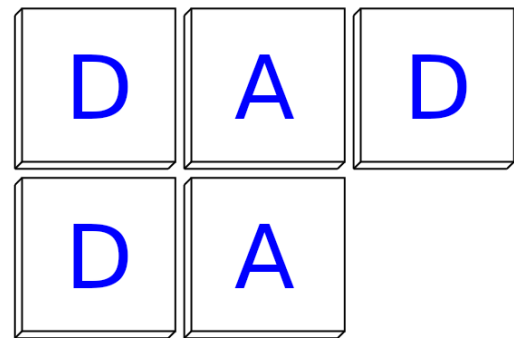
A	$\frac{2!}{3! \cdot 2!}$	B	$3! \cdot 3!$
C	$\frac{1}{3! \cdot 2!}$	D	$5! \cdot 2!$
E	$3! \cdot 4!$	F	$3! \cdot 2!$

59 How many ways can these cards be arranged to still be arranged smallest to largest?



A	48	B	240	C	144
D	36	E	12		

60 How many ways can these letter tiles be ordered to spell 'DADDA'? Show as a multiplication.



A	$3 \cdot 2 \cdot 2$	B	$3 \cdot 2 \cdot 3 \cdot 2$
C	$3 \cdot 2 \cdot 4 \cdot 3 \cdot 2$	D	$\frac{1}{3 \cdot 2 \cdot 2}$
E	$4 \cdot 3 \cdot 2 \cdot 2$	F	$\frac{2}{3 \cdot 2 \cdot 2}$

61 Select the correct equivalent to this factorial

$$\frac{3!}{2!}$$

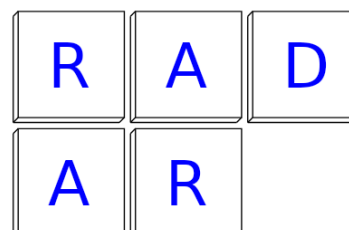
A	3	B	1
C	5	D	$\frac{1}{60}$

62 Select the correct factorial equivalent to this multiplication

$$\frac{1}{6 \cdot 5}$$

A	$\frac{6!}{6!}$	B	$\frac{3!}{7!}$	C	$\frac{2!}{4!}$
D	$\frac{2!}{5!}$	E	$\frac{4!}{6!}$		

63 How many ways can these letter tiles be ordered to spell 'RADAR'?

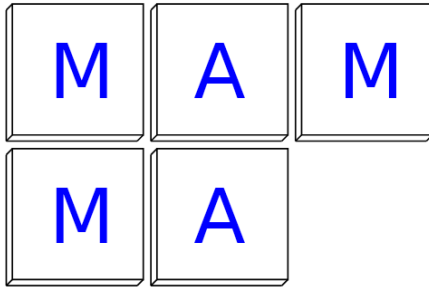


A	12
B	48
C	4



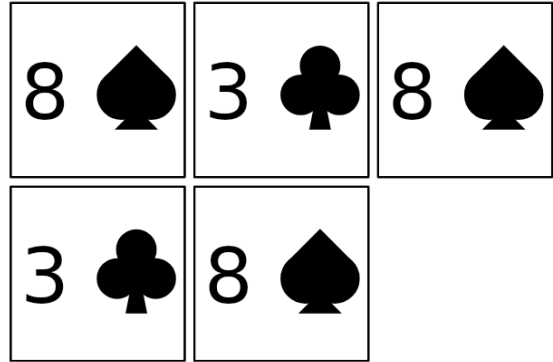
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64 How many ways can these letter tiles be ordered to spell 'MAMMA'? Show as a factorial.



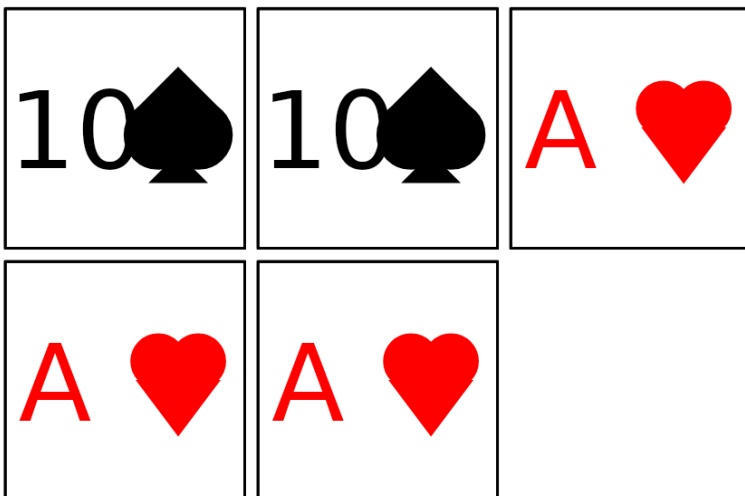
A	$\frac{1}{2! \cdot 3!}$	B	$\frac{2!}{2! \cdot 3!}$
C	$2! \cdot 4!$	D	$3! \cdot 3!$
E	$2! \cdot 3!$	F	$2! \cdot 5!$

65 How many distinct ways can these cards be ordered? Show as a multiplication.



A	$\frac{3 \cdot 2}{2 \cdot 3 \cdot 2}$	B	$\frac{4 \cdot 3 \cdot 2}{2 \cdot 3 \cdot 2}$
C	$\frac{5 \cdot 4 \cdot 3 \cdot 2}{2 \cdot 3 \cdot 2}$	D	$\frac{5 \cdot 4 \cdot 3 \cdot 2}{2 \cdot 4 \cdot 3 \cdot 2}$
E	$\frac{5 \cdot 4 \cdot 3 \cdot 2}{2 \cdot 5 \cdot 4 \cdot 3 \cdot 2}$	F	$\frac{5 \cdot 4 \cdot 3 \cdot 2}{3 \cdot 2 \cdot 3 \cdot 2}$

66 How many distinct ways can these cards be ordered? Show as a factorial.

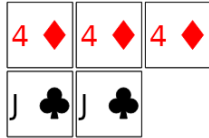


A	$\frac{5!}{5! \cdot 0!}$
B	$\frac{5!}{5! \cdot 2!}$
C	$\frac{5!}{3! \cdot 2!}$
D	$\frac{5!}{3! \cdot 4!}$



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67 How many distinct ways can these cards be ordered?



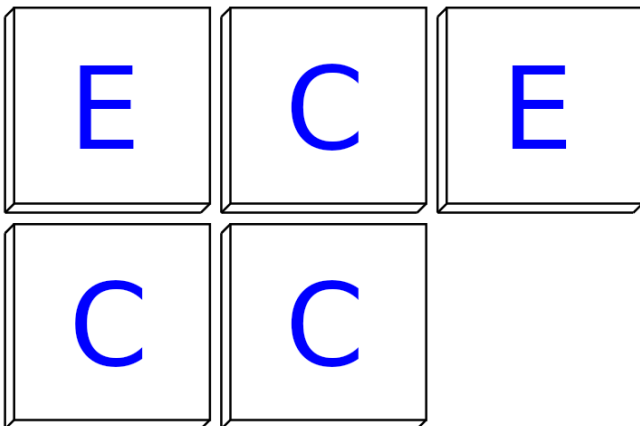
A	3	B	15	C	10
D	0	E	9	F	5

68 How many distinct ways can these letter tiles be ordered?



A	30	B	8	C	10
D	16	E	0	F	17

69 How many distinct ways can these letter tiles be ordered? Show as a multiplication.



A

$$\frac{5 \cdot 4 \cdot 3 \cdot 2}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$$

B

$$\frac{3 \cdot 2}{2 \cdot 3 \cdot 2}$$

C

$$\frac{5 \cdot 4 \cdot 3 \cdot 2}{2 \cdot 3 \cdot 2}$$

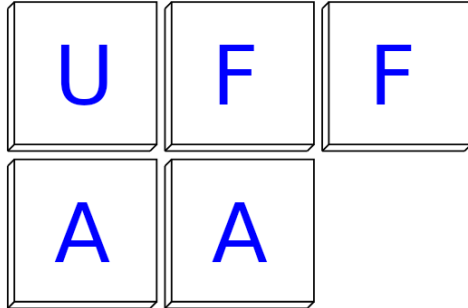
D

$$\frac{5 \cdot 4 \cdot 3 \cdot 2}{2 \cdot 2 \cdot 3 \cdot 2}$$



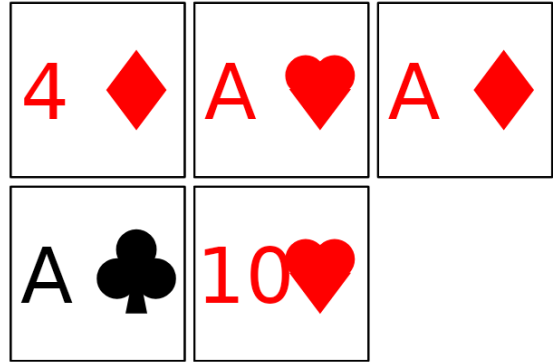
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70 How many distinct ways can these letter tiles be ordered? Show as a factorial.



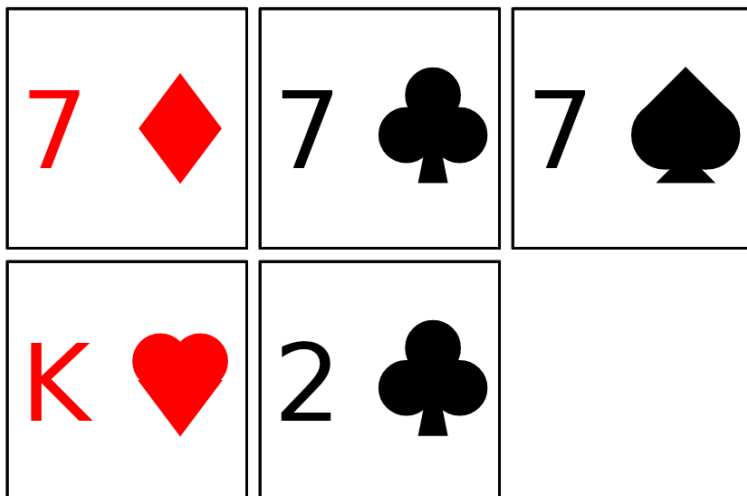
A	$\frac{5!}{2! \cdot 4!}$	B	$\frac{3!}{2! \cdot 2!}$
C	$\frac{5!}{4! \cdot 2!}$	D	$\frac{5!}{2! \cdot 2!}$
E	$\frac{5!}{2! \cdot 3!}$	F	$\frac{4!}{2! \cdot 2!}$

71 How many total ways can 2 cards be drawn from this set? Show in nCm notation.



A	${}_3C_2$	B	${}_5P_2$
C	${}_5R_2$	D	${}_5B_2$
E	${}_2C_5$	F	${}_5C_2$

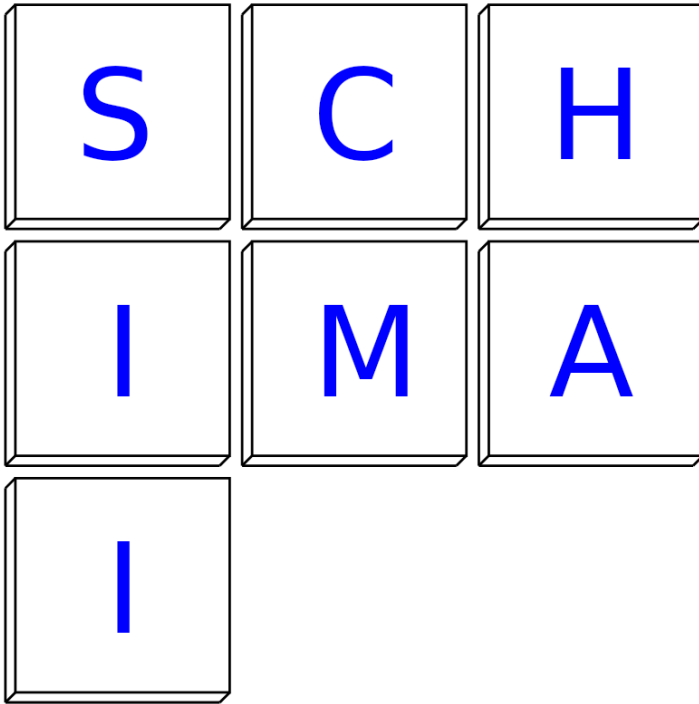
72 How many ways can two 7s be drawn from this set? Show as a factorial.



A	$\frac{2!}{3! \cdot 1!}$
B	$\frac{4!}{2! \cdot 2!}$
C	$\frac{3!}{2! \cdot 1!}$
D	$3!$

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73 How many total ways can 2 letter tiles be drawn from this set? Show as a factorial.



A

$$\frac{7!}{5!}$$

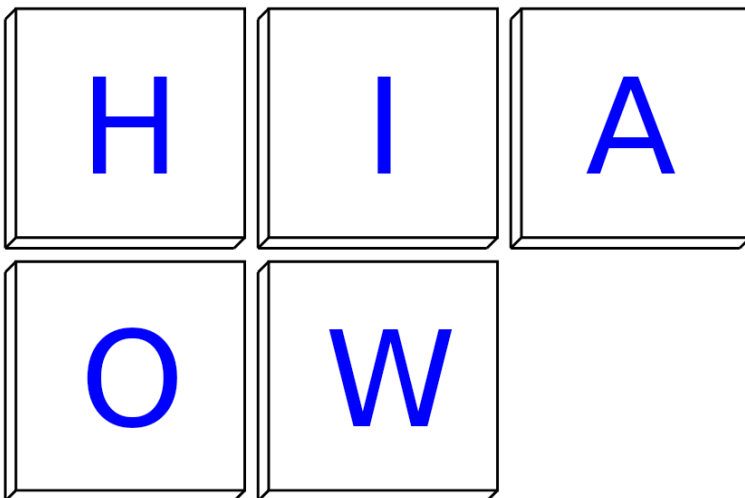
B

$$\frac{7!}{2! \cdot 5!}$$

C

$$\frac{2!}{7! \cdot 5!}$$

74 How many ways can 2 vowels be drawn from this set? Show as a factorial.



A

$$\frac{2!}{3! \cdot 1!}$$

B

$$3!$$

C

$$\frac{3!}{2! \cdot 1!}$$

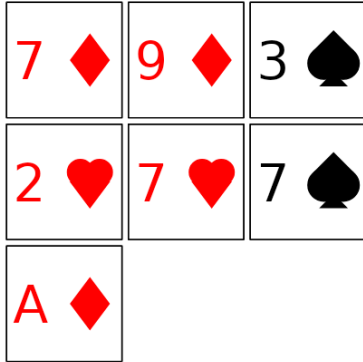
D

$$\frac{4!}{2! \cdot 2!}$$



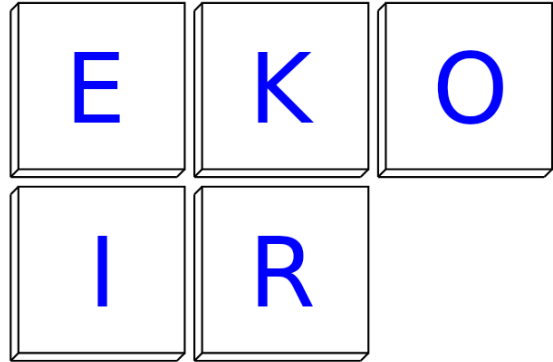
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75 How many ways can two 7s be drawn from this set? Show in nCm notation.



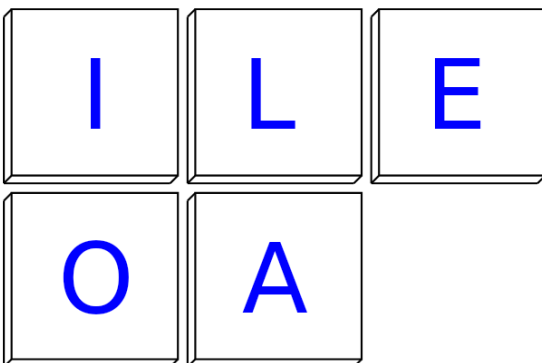
A	${}_3C_2$	B	${}_3C_3$
C	${}_2C_3$	D	${}_3B_2$
E	${}_3P_2$	F	${}_3R_2$

76 How many total ways can 2 letter tiles be drawn from this set? Show in nCm notation.



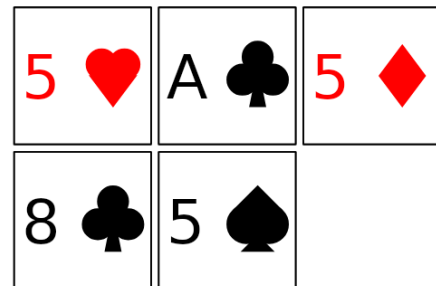
A	${}_5B_2$	B	${}_5R_2$
C	${}_2C_5$	D	${}_5C_2$
E	${}_5P_2$	F	${}_4C_4$

77 How many ways can 2 vowels be drawn from this set? Show in nCm notation.



A	${}_4R_2$	B	${}_3C_3$
C	${}_4C_2$	D	${}_4P_2$
E	${}_4B_2$	F	${}_2C_4$

78 How many total ways can 2 cards be drawn from this set? Show as a binomial coefficient (bracket notation).



A	$\binom{7}{2}$	B	$\binom{3}{3}$
C	$\binom{2}{5}$	D	$\binom{5}{2}$
E	$\binom{5}{4}$	F	$\binom{6}{4}$