

Combinations**List all possible combinations.**

1) T, V, W, taken two at a time

2) A, B, C, D, taken two at a time

3) ☺, ☺, ♥, ♠, taken three at a time

4) 4, 5, 6, 7, taken four at a time

Evaluate each expression.

5) ${}_{22}C_{02}$

6) ${}_{11}C_8$

7) ${}_{21}C_8$

8) ${}_{25}C_{23}$

9) ${}_{42}C_5$

10) ${}_{17}C_{10}$

11) ${}_{81} \cdot 4C_{11}$

12) ${}_{20}C_{16} + 1$

13) $\frac{{}_{20}C_5}{8}$

14) $-6 + {}_{19}C_5$

Critical thinking questions:15) Explain why ${}_nC_2 = {}_nC_{n-2}$

16) Write a combination that equals 12345

Combinations

List all possible combinations.

1) T, V, W, taken two at a time

$$\begin{array}{ll} \text{TV} & \text{VW} \\ \text{TW} & \end{array}$$

2) A, B, C, D, taken two at a time

$$\begin{array}{ll} \text{AB} & \text{BC} \\ \text{AC} & \text{BD} \\ \text{AD} & \text{CD} \end{array}$$

3) ☺, ☼, ♥, ▲, taken three at a time

$$\begin{array}{ll} \text{☺ ☼ ♥} & \text{☼ ♥ ▲} \\ \text{☺ ☼ ▲} & \\ \text{☺ ♥ ▲} & \end{array}$$

4) 4, 5, 6, 7, taken four at a time

$$\begin{array}{ll} \text{4567} & \end{array}$$

Evaluate each expression.

5) ${}_{22}C_{20}$

$$\begin{array}{ll} 231 & \end{array}$$

6) ${}_{11}C_8$

$$\begin{array}{ll} 165 & \end{array}$$

7) ${}_{12}C_8$

$$\begin{array}{ll} 495 & \end{array}$$

8) ${}_{25}C_{23}$

$$\begin{array}{ll} 300 & \end{array}$$

9) ${}_{24}C_5$

$$\begin{array}{ll} 42,504 & \end{array}$$

10) ${}_{17}C_{10}$

$$\begin{array}{ll} 19,448 & \end{array}$$

11) $4 \cdot {}_{18}C_{11}$

$$\begin{array}{ll} 127,296 & \end{array}$$

12) ${}_{20}C_{16} + 1$

$$\begin{array}{ll} 4,846 & \end{array}$$

13) $\frac{{}_{20}C_5}{8}$

$$\begin{array}{ll} 1,938 & \end{array}$$

14) $-6 + {}_{19}C_5$

$$\begin{array}{ll} 11,622 & \end{array}$$

Critical thinking questions:15) Explain why ${}_nC_2 = {}_nC_{n-2}$

Choosing $n - 2$ means two are being left behind.
You could think of it choosing those two.

16) Write a combination that equals 12345

$$\begin{array}{ll} 12345C_1 & \end{array}$$