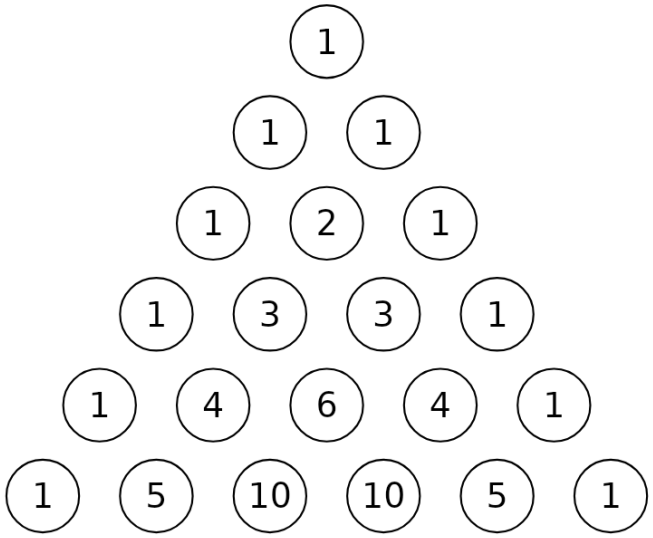
Name

Probability and Statistics - Binomial Theorem and Pascal's Triangle - Practice

1 Use Pascal's triangle to expand this expression.



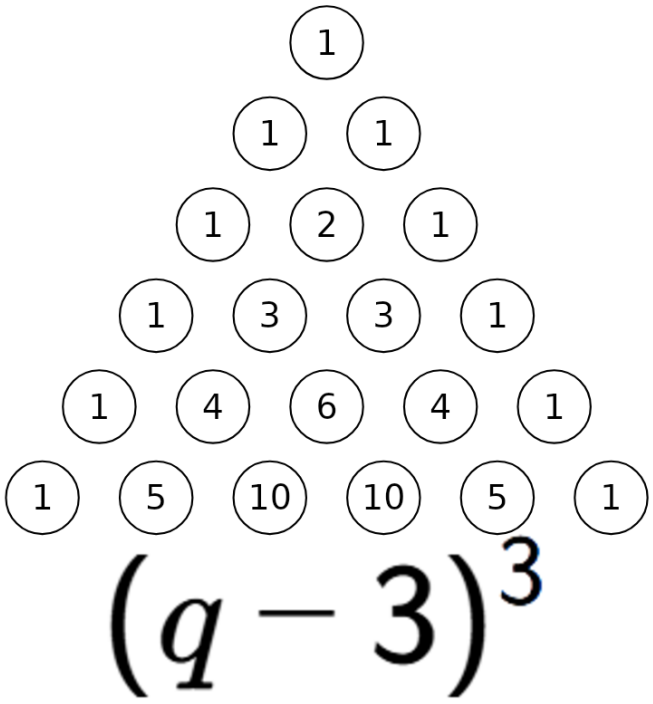
A $x^2+2mx+m^2$

B $m^2+3mx+3x^2$

C $m^2+2mx+x^2$

D m^2+mx

2 Use Pascal's triangle to write the partly-expanded form (leave each power un-evaluated).



A $1q^3+3\cdot(-3)^1q^2+3\cdot(-3)^2q+1\cdot(-3)^3$

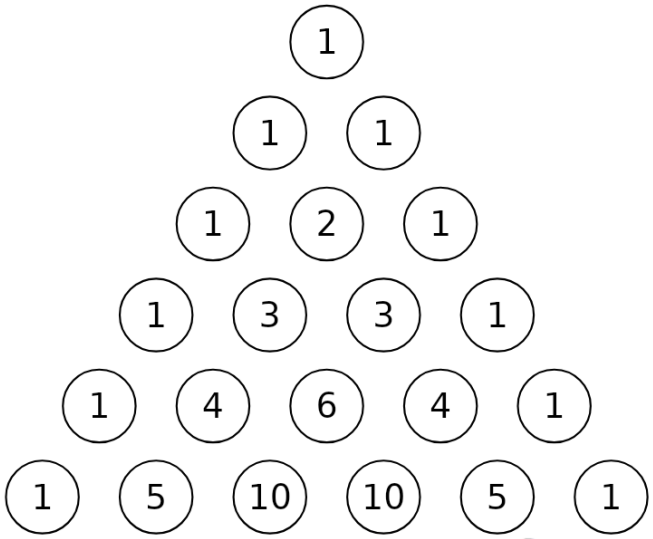
B $1q^3+2\cdot(-3)^1q^2+1\cdot(-3)^2q+0\cdot(-3)^3$

C $1q^3+4\cdot(-3)^1q^2+6\cdot(-3)^2q+4\cdot(-3)^3$

Name

Probability and Statistics - Binomial Theorem and Pascal's Triangle - Practice

3 Use Pascal's triangle to fully expand this expression.



$$(x-2)^4$$

A

$$x^4 - 6x^3 + 12x^2 - 8x$$

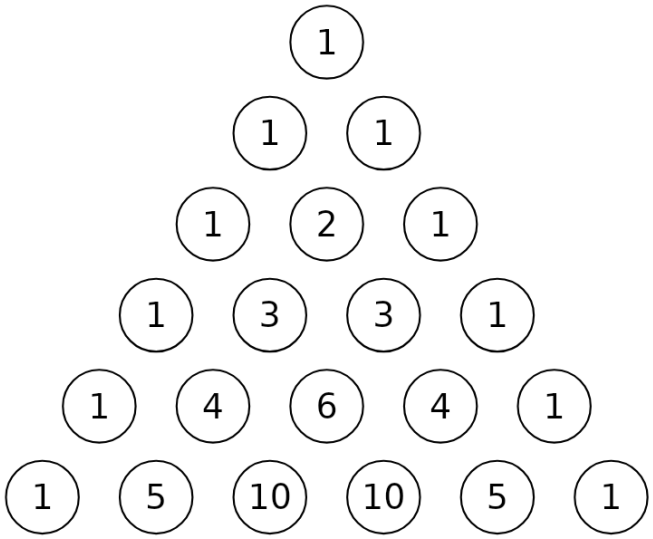
B

$$x^4 - 8x^3 + 24x^2 - 32x + 16$$

C

$$-8x^3 - 24x^2 - 24x - 8$$

4 Use Pascal's triangle to write the partly-expanded form (leave each power un-evaluated).



$$(3r-3)^2$$

A

$$1 \cdot (3)^2 r^2 + 3 \cdot (3)^1 \cdot (-3)^1 r + 3 \cdot (-3)^2$$

B

$$1 \cdot (3)^2 r^2 + 1 \cdot (3)^1 \cdot (-3)^1 r + 0 \cdot (-3)^2$$

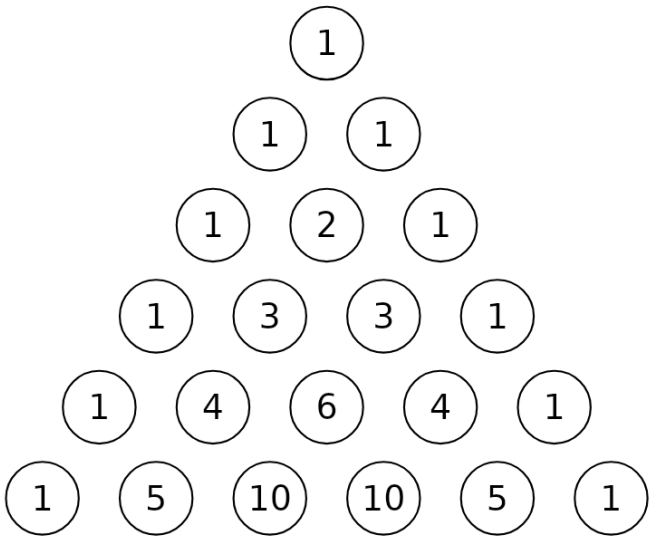
C

$$1 \cdot (3)^2 r^2 + 2 \cdot (3)^1 \cdot (-3)^1 r + 1 \cdot (-3)^2$$

Name

Probability and Statistics - Binomial Theorem and Pascal's Triangle - Practice

5 Use Pascal's triangle to fully expand this expression.



$$(-3t-3)^4$$

A $81t^4+243t^3+243t^2+81t$

B $81t^4+324t^3+486t^2+324t+81$

C $324t^3-324t^2+108t-12$

6 Find the term containing n^{1} in the expansion of this expression.

\begin{array}{c}(n+t)^{4}\\(n+t)^{4}=\sum_{k=0}^{4}{4\choose k}n^{4-k}t^{k}\end{array}

$$(n+t)^4$$

$$(n+t)^4=\sum_{k=0}^{4}\binom{4}{k}n^{4-k}t^k$$

A $\binom{4}{4}n^0t^4$

B $\binom{4}{3}n^3t^1$

C $\binom{4}{3}n^1t^3$

D $\binom{3}{4}n^1t^3$

7 Find the term containing r^{2} in the expansion of this expression.

\begin{array}{c}(r+p)^{3}\\(r+p)^{3}=\sum_{k=0}^{3}{3\choose k}r^{3-k}p^{k}\end{array}

$$(r+p)^3$$

$$(r+p)^3=\sum_{k=0}^{3}\binom{3}{k}r^{3-k}p^k$$

A 3

B 1

C 2

8 Find the term containing y^{3} in the expansion of this expression.

\begin{array}{c}(y+3)^{4}\\(y+3)^{4}=\sum_{k=0}^{4}{4\choose k}y^{4-k}3^{k}\end{array}

$$(y+3)^4$$

$$(y+3)^4=\sum_{k=0}^{4}\binom{4}{k}y^{4-k}3^k$$

A $\binom{4}{1}y^3(3)^1$

B $\binom{1}{4}y^3(3)^1$

C $\binom{4}{1}y^3(3)^3$

D $\binom{4}{1}y^1(3)^3$

9 Find the term containing z^{2} in the expansion of this expression.

\begin{array}{c}(z-3)^{3}\\(z-3)^{3}=\sum_{k=0}^{3}{3\choose k}z^{3-k}(-3)^{k}\end{array}

$$(z-3)^3$$

$$(z-3)^3=\sum_{k=0}^{3}\binom{3}{k}z^{3-k}(-3)^k$$

A $\binom{3}{2}z^1\cdot 9$

B $\binom{3}{1}z^2\cdot -3$

Name

Probability and Statistics - Binomial Theorem and Pascal's Triangle - Practice

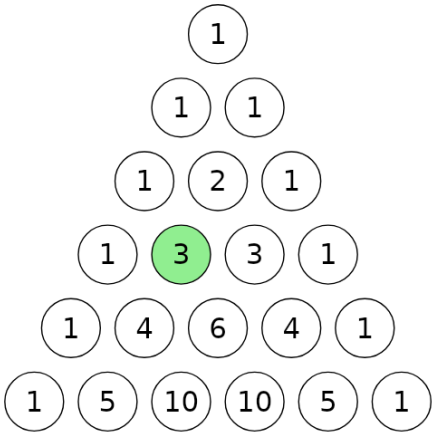
10 Using Pascal's triangle, find the binomial coefficient for the term containing p^{3} in the expansion of this expression. Select the coefficient (the triangle entry), not the full term.

\begin{array}{c}(p+m)^{4}\\(p+m)^{4}=\sum_{k=0}^{4}{4\choose k}p^{4-k}m^{k}\end{

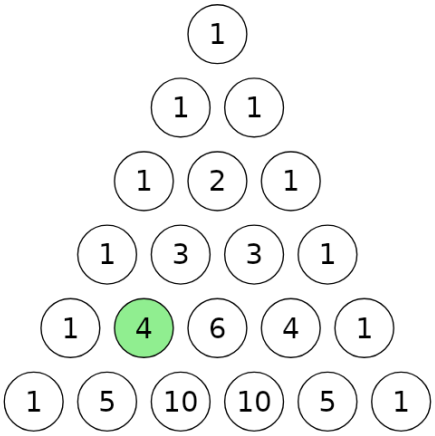
$$(p+m)^4$$

$$(p+m)^4 = \sum_{k=0}^{4} \binom{4}{k} p^{4-k} m^k$$

A



B



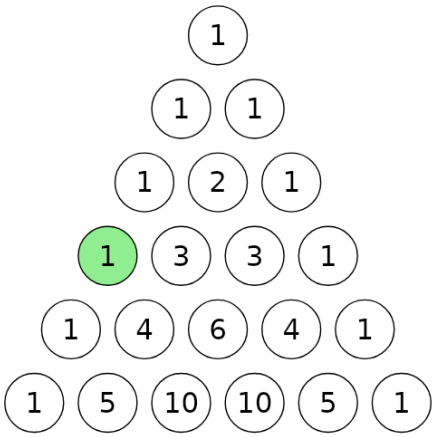
11 Using Pascal's triangle, find the binomial coefficient for the term containing r^{2} in the expansion of this expression. Select the coefficient (the triangle entry), not the full term.

\begin{array}{c}(r-2)^{3}\\(r-2)^{3}=\sum_{k=0}^{3}{3\choose k}r^{3-k}(-2)^{k}\end{arr

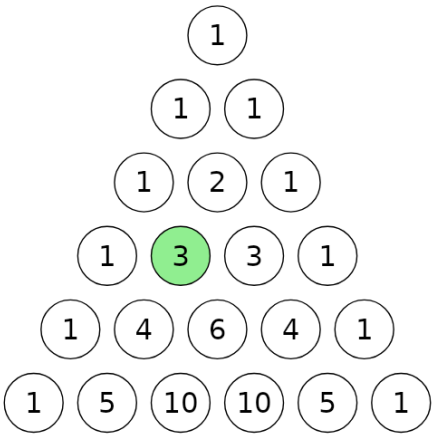
$$(r-2)^3$$

$$(r-2)^3 = \sum_{k=0}^{3} \binom{3}{k} r^{3-k} (-2)^k$$

A



B



Name

Probability and Statistics - Binomial Theorem and Pascal's Triangle - Practice

12 Find the term containing t^{2} in the expansion of this expression.

\begin{array}{c}(t-2)^{3}\\(t-2)^{3}=\sum_{k=0}^{3}{3\choose k}t^{3-k}(-2)^{k}\end{array}

$$(t-2)^3$$

$$(t-2)^3 = \sum_{k=0}^{3} \binom{3}{k} t^{3-k}(-2)^k$$

A -6	B 12
C 6	

13 Find the term containing t^{1} in the expansion of this expression.

(t+p)^{4}

$$(t+p)^4$$

A $\binom{4}{3} t^1 p^3$	B $\binom{3}{4} t^1 p^3$
C $\binom{4}{4} t^0 p^4$	D $\binom{4}{3} t^3 p^1$

14 Using Pascal's triangle, find the binomial coefficient for the term containing r^{2} in the expansion of this expression. Select the coefficient (the triangle entry), not the full term.

(r+x)^{5}

$$(r+x)^5$$

A

1
1 1
1 2 1
1 3 3 1
1 4 6 **4** 1
1 5 10 10 5 1
1 6 15 20 15 6 1

B

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 **10** 5 1
1 6 15 20 15 6 1

15 Find the term containing r^{3} in the expansion of this expression.

(r+x)^{4}

$$(r+x)^4$$

A 6	B 3
C 1	D 4

16 Find the term containing p^{1} in the expansion of this expression.

(p-2)^{3}

$$(p-2)^3$$

A $\binom{3}{2} p^2(-2)^1$	B $\binom{3}{2} p^1(-2)^1$
C $\binom{3}{2} p^1(-2)^2$	D $\binom{2}{3} p^1(-2)^2$

Name

Probability and Statistics - Binomial Theorem and Pascal's Triangle - Practice

17 Find the term containing m^{3} in the expansion of this expression.

(m+3)^{4}

$$(m+3)^4$$

A

$$\binom{4}{2} m^2 \cdot 9$$

B

$$\binom{4}{1} m^3 \cdot 3$$

18 Find the term containing p^{2} in the expansion of this expression.

(p-3)^{4}

$$(p-3)^4$$

A

-36

B

-108

C

54

19 Using Pascal's triangle, find the binomial coefficient for the term containing p^{2} in the expansion of this expression. Select the coefficient (the triangle entry), not the full term.

(p+3)^{3}

$$(p+3)^3$$

A

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1

B

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1