

أجابات كتاب التمارين

الوحدة 3 : الاحتمالات

أجابات أستعد لدراسة الوحدة صفحة 17+18

السؤال	رقم الصفحة	الإجابة / الحل التفصيلي
1 الفرع a	17	$\frac{5!}{3!} = \frac{5 \times 4 \times 3!}{3!} = 20$
1 الفرع b	17	$\frac{9!}{3! \times 6!} = \frac{9 \times 8 \times 7 \times 6!}{3! \times 6!} = \frac{9 \times 8 \times 7}{3 \times 2 \times 1} = 84$
2	17	$(n + 1)! = 24$ $(n + 1)! = 4!$ $n + 1 = 4$ $n = 3$
3	17	$5P3 = 5 \times 4 \times 3 = 60$
4	18	$10P2 \times 8C2 = 90 \times 28 = 2520$
5	18	$6C2 \times 6C2 = 15 \times 15 = 225$

الدرس 1 : الاحتمالات بالتباديل والتوافيق

السؤال	رقم الصفحة	الإجابة / الحل التفصيلي
1	19	$P(A) = \frac{2 \times 3!}{4!} = \frac{1}{2}$
2	19	$P(A) = \frac{1}{5P2} = \frac{1}{20}$
3	19	$P(A) = \frac{5C3}{9C3} = \frac{10}{84} = \frac{5}{42}$
4	19	$P(A) = \frac{6C2 \times 6C2}{12C4} = \frac{15 \times 15}{495} = \frac{15}{33}$
5	19	$P(B) = \frac{6P2 \times 6C2}{12C4} = \frac{30 \times 15}{495} = \frac{30}{33}$
6	19	$P(M) = \frac{6C4}{12C4} = \frac{15}{495} = \frac{1}{33}$
7	19	$P(F) = \frac{6C3 \times 6C1}{12C4} + \frac{6C4}{12C4} = \frac{20 \times 6}{495} + \frac{15}{495} = \frac{135}{495} = \frac{3}{11}$
8	19	$P(A) = \frac{10C2 \times 10C3}{20C5} = \frac{45 \times 120}{15504} = \frac{675}{1938}$

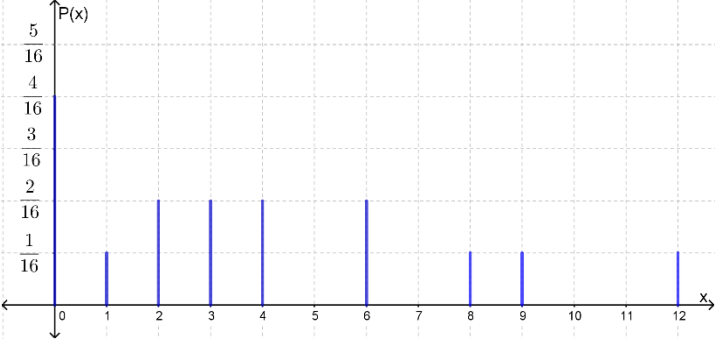
$P(B) = \frac{10C5}{20C5} = \frac{252}{15504} = \frac{63}{3876} = \frac{21}{1292}$	19	9
$P(D) = \frac{10C3 \times 10C2 + 10C4 \times 10C1 + 10C5 \times 10C0}{20C5}$ $= \frac{120 \times 45 + 210 \times 10 + 252 \times 1}{15504}$ $= \frac{7752}{15504} = \frac{1938}{3876} = \frac{646}{1292}$	19	10

الدرس 2 : المتغير العشوائي

السؤال	رقم الصفحة	الإجابة / الحل التفصيلي
1	20	$X = \{0, 1, 2\}$
2	20	$X = \{0, 1, 2, 3, 4\}$
3	20	$A = \{(1, 3), (3, 1)\}$
4	20	$B = \{(1, 3), (3, 1), (2, 2)\}$
5	20	$X = \{1, 2, 3, 4, 5, 6, 7\}$
6	20	$X = \{1, 2, 3, 4\}$
7	20	$X = \{1, 2, 3, 4, 6, 8, 9, 12\}$

الدرس 3 : احتمال المتغير العشوائي

السؤال	رقم الصفحة	الإجابة / الحل التفصيلي																				
1	21	<table border="1"> <tr> <td>X</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>$P(X)$</td> <td>$\frac{1}{16}$</td> <td>$\frac{2}{16}$</td> <td>$\frac{3}{16}$</td> <td>$\frac{4}{16}$</td> <td>$\frac{3}{16}$</td> <td>$\frac{2}{16}$</td> <td>$\frac{1}{16}$</td> </tr> </table>	X	1	2	3	4	5	6	7	$P(X)$	$\frac{1}{16}$	$\frac{2}{16}$	$\frac{3}{16}$	$\frac{4}{16}$	$\frac{3}{16}$	$\frac{2}{16}$	$\frac{1}{16}$				
X	1	2	3	4	5	6	7															
$P(X)$	$\frac{1}{16}$	$\frac{2}{16}$	$\frac{3}{16}$	$\frac{4}{16}$	$\frac{3}{16}$	$\frac{2}{16}$	$\frac{1}{16}$															
2	21																					
3	21	<table border="1"> <tr> <td>X</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>6</td> <td>8</td> <td>9</td> <td>12</td> </tr> <tr> <td>$P(X)$</td> <td>$\frac{4}{16}$</td> <td>$\frac{1}{16}$</td> <td>$\frac{2}{16}$</td> <td>$\frac{2}{16}$</td> <td>$\frac{2}{16}$</td> <td>$\frac{2}{16}$</td> <td>$\frac{1}{16}$</td> <td>$\frac{1}{16}$</td> <td>$\frac{1}{16}$</td> </tr> </table>	X	0	1	2	3	4	6	8	9	12	$P(X)$	$\frac{4}{16}$	$\frac{1}{16}$	$\frac{2}{16}$	$\frac{2}{16}$	$\frac{2}{16}$	$\frac{2}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
X	0	1	2	3	4	6	8	9	12													
$P(X)$	$\frac{4}{16}$	$\frac{1}{16}$	$\frac{2}{16}$	$\frac{2}{16}$	$\frac{2}{16}$	$\frac{2}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$													

	21	4								
$a + 0.2 + a + 0.1 = 1$ $2a + 0.3 = 1$ $2a = 0.7$ $a = 0.35$	21	5								
$P(x = 3) = 0.35$	21	6								
$P(2 \leq x < 4) = P(x = 2) + P(x = 3)$ $= 0.2 + 0.35 = 0.55$	21	7								
$P(1 \leq x < 2) = P(x = 1)$ $= 0.35$	21	8								
$k + 2k + 2k = 1$ $5k = 1$ $k = 0.2$	21	9								
<table border="1"> <tbody> <tr> <td>X</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>P(X)</td> <td>0.2</td> <td>0.4</td> <td>0.4</td> </tr> </tbody> </table>	X	0	1	2	P(X)	0.2	0.4	0.4	21	10
X	0	1	2							
P(X)	0.2	0.4	0.4							
$P(x \leq 1) = P(x = 0) + P(x = 1)$ $= 0.2 + 0.4 = 0.6$	21	11								
<table border="1"> <tbody> <tr> <td>X</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>P(X)</td> <td>$\frac{10}{36}$</td> <td>$\frac{20}{36}$</td> <td>$\frac{6}{36}$</td> </tr> </tbody> </table>	X	0	1	2	P(X)	$\frac{10}{36}$	$\frac{20}{36}$	$\frac{6}{36}$	21	12
X	0	1	2							
P(X)	$\frac{10}{36}$	$\frac{20}{36}$	$\frac{6}{36}$							

الدرس 4 : توقع المتغير العشوائي

السؤال	رقم الصفحة	الإجابة / الحل التفصيلي										
1	22	0.25										
2	22	$E(x) = 0 \times 0.3 + 1 \times 0.25 + 2 \times 0.4 + 3 \times 0.05$ $= 1.2$										
3	22	<table border="1"> <tbody> <tr> <td>X</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>P(X)</td> <td>0.36</td> <td>0.44</td> <td>0.15</td> <td>0.05</td> </tr> </tbody> </table> $E(x) = 2 \times 0.36 + 3 \times 0.44 + 4 \times 0.15 + 5 \times 0.05$ $= 2.89$	X	2	3	4	5	P(X)	0.36	0.44	0.15	0.05
X	2	3	4	5								
P(X)	0.36	0.44	0.15	0.05								
4	22	$P(x = 1) = 0.4, \quad P(x = 3) = 0.1$										
5	22	$E(x) = 3 \times 0.15 + 4 \times 0.45 + 5 \times 0.25 + 6 \times 0.15$ $= 4.4$										

$\begin{aligned}\sigma^2 &= (9 \times 0.15 + 16 \times 0.45 + 25 \times 0.25 + 36 \times 0.15) - (4.4)^2 \\ &= 20.2 - 19.36 \\ &= 0.84\end{aligned}$		
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