Directions 1 – 4 : Read the given information carefully and answer the questions given below.

Some numbers are given in the first row, and the probability of choosing those numbers is given in the second row. All the numbers together form a series.

Number	6	x	y	1.5y + 3	4y + 4	75
Probability	1/3	1/6	1/3	1/6	1/6	1/6

4, 6, 21, 85, 395, 2364 is a wrong number series.

Q:1 You have to find the correct number in the given series. Find the correct number in terms of x and y.

1. 14x + 6y
2. 2x + 12y
3. 8x + 5y
4. 15x + 5y
5. 12x – 15y

Q:2 Find the wrong number in the series 2, 6, 12, 48, 72, 216 and divide the number by $(x + y - 1)$.

1. 6
2. 4
3. 2
4. 8
5. 12

Q:3 Find the value of $\sqrt{12xy + 1}$.

1. 15
2. 16
3. 17
4. 22
5. 23

Q:4 Find the average of the 2 numbers that are repeated in the series.

1. 5
2. 8
3. 4.5
4. 6
5. 12

Q:5 Answer the questions based on the given information below.

The circumference of the circle is 88 cm, the length (l) of the rectangle is equal to four times the radius (r) of the circle, and the breadth (b) of the rectangle is 3/2 of the length of the rectangle.
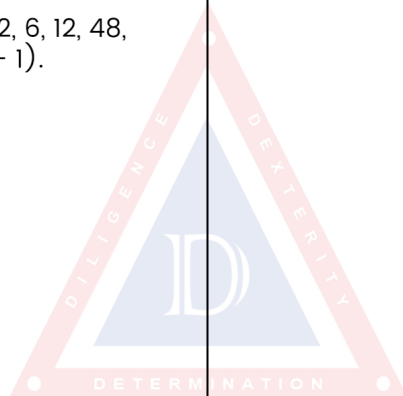
Equation(i): $ax^2 - 71x + (1 - r) = 0$

Equation(ii): $py^2 - 5y - (b - 1) = 0$

The positive roots of equations (i) and (ii) are 7/6 and 7/4, respectively.

Find the value of $\sqrt{a^2 + p^2 - 20}$

1. 21
2. 27
3. 32
4. 33
5. 36

Answer Key

1. (2)	2. (2)	3. (3)	4. (4)	5. (3)

Answers and Solutions

Q:1 The correct answer is **option 2 i.e. 2x + 12y**.

Number	6	x	y	1.5y + 3	4y + 4	75
Probability	1/3	1/6	1/3	1/6	1/6	1/6

The given series shows that the first number and the number y are repeated 2 times, and x, 1.y + 3, 4y + 4, and 75 are repeated only 1 time.

The probability of choosing the first number and the probability of choosing the number 'y' is 1/3, which is the same.

So, y = 6

Hence the series:

$6, x, 6, (1.5 \times 6 + 3), (4 \times 6 + 4), 75$

6, x, 12, 28, 75

The pattern of the series:

6

$x = 6 \times 0.5 + 1 = 4$

$4 \times 1 + 2 = 6$

$6 \times 1.5 + 3 = 12$

$12 \times 2 + 4 = 28$

$28 \times 2.5 + 5 = 75$

Series = 6, 4, 12, 28, 75

Now, according to the question,

4, 6, 21, 85, 395, 2364

The pattern of the series:

$3 \times 1 + 1 = 4$

$4 \times 2 - 2 = 6$

$6 \times 3 + 3 = 21$

$21 \times 4 - 4 = 80 \ (\text{not } 85)$

$85 \times 5 + 5 = 395$

$395 \times 6 - 6 = 2364$

The correct number = 80

From the option, the correct answer = **2x + 12y**

$= 2 \times 4 + 12 \times 6 = 8 + 72 = \textbf{80}$

Q:2 The correct answer is **option 2 i.e. 4**.

Number	6	x	y	1.5y + 3	4y + 4	75
Probability	1/3	1/6	1/3	1/6	1/6	1/6

The given series shows that the first number and the number y are repeated 2 times, and x, 1.y + 3, 4y + 4, and 75 are repeated only 1 time.

The probability of choosing the first number and the probability of choosing the number 'y' is 1/3, which is the same.

So, y = 6

Hence the series:

$6, x, 6, (1.5 \times 6 + 3), (4 \times 6 + 4), 75$

6, x, 12, 28, 75

The pattern of the series:

6

$x = 6 \times 0.5 + 1 = 4$

$4 \times 1 + 2 = 6$

$6 \times 1.5 + 3 = 12$

$12 \times 2 + 4 = 28$

$28 \times 2.5 + 5 = 75$

Series = 6, 4, 12, 28, 75

According to the question,

The pattern of the given series is:

2,

$2 \times 3 = 6$

$6 \times 2 = 12$

$12 \times 3 = 36 \ (\text{not } 48)$

$36 \times 2 = 72$

$72 \times 3 = 216$

Wrong number = 48

Now,

$48/(x + y + 2) = 48/(4 + 6 + 2)$

= 4

Q:3 The correct answer is **option 3 i.e. 17**.

Number	6	x	y	1.5y + 3	4y + 4	75
Probability	1/3	1/6	1/3	1/6	1/6	1/6

The given series shows that the first number and the number y are repeated 2 times, and x, 1.y + 3, 4y + 4, and 75 are repeated only 1 time.

The probability of choosing the first number and the probability of choosing the number 'y' is 1/3, which is the same.

So, y = 6

Hence the series:

$6, x, 6, (1.5 \times 6 + 3), (4 \times 6 + 4), 75$

6, x, 12, 28, 75

The pattern of the series:

6

$x = 6 \times 0.5 + 1 = 4$

$4 \times 1 + 2 = 6$

$6 \times 1.5 + 3 = 12$

$12 \times 2 + 4 = 28$

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28 × 2.5 + 5 = 75
Series = 6, 4, 12, 28, 75
Now, according to the question,
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= 17

Q:4 The correct answer is **option 4** i.e. **6**.

Number	6	x	y	1.5y + 3	4y + 4	75
Probability	1/3	1/6	1/3	1/6	1/6	1/6

The given series shows that the first number and the number y are repeated 2 times, and x, 1.y + 3, 4y + 4, and 75 are repeated only 1 time.
The probability of choosing the first number and the probability of choosing the number 'y' is 1/3, which is the same.
So, y = 6
Hence the series:
6, x, 6, (1.5 × 6 + 3), (4 × 6 + 4), 75
6, x, 12, 28, 75
The pattern of the series:
6
x = 6 × 0.5 + 1 = 4
4 × 1 + 2 = 6
6 × 1.5 + 3 = 12
12 × 2 + 4 = 28
28 × 2.5 + 5 = 75
Series = 6, 4, 12, 28, 75
Now, according to the question,
The average of the repeated number = (6 + 6)/2
= 6

Q:5 The correct answer is **option 3** i.e. **32**.
The circumference of the circle = 88 cm
⇒ 2πr = 88
⇒ r = 14 cm
The length (l) of the rectangle is equal to four times the radius (r) of the circle
⇒ l = 4r
⇒ l = 56
The breadth (b) of the rectangle is 3/2 of the length of the rectangle.
⇒ b = 56 × 3/2 = 84
Equation(i): $ax^2 - 71x + (l - r) = 0$
= $ax^2 - 71x + (56 - 14) = 0$
= $ax^2 - 71x + 42 = 0$.........................3

Equation(ii): $py^2 - 5y - (b - l) = 0$
$py^2 - 5y - (84 - 56) = 0$
$py^2 - 5y - 28 = 0$.........................4
If the roots of equations (i) and (ii) are 7/6 and 7/4 respectively then these roots will satisfy the equation 3 and 4.
Put x = 7/6 in equation 3
⇒ $ax^2 - 71x + 42 = 0$
⇒ 49a/36 - 497/6 + 42 = 0
⇒ 49a/36 = 245/6
⇒ a = 30
Put y = 7/4 in equation 4
⇒ $py^2 - 5y - 28 = 0$
⇒ 49p/16 - 35/4 - 28 = 0
⇒ 49p/16 = 147/4
⇒ p = 12
The value of *[Math Processing Error]* = *[Math Processing Error]* = *[Math Processing Error]* = 32