

Exercise 7.1

1. Calculate the mean for the following distribution:

<b>x:</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
<b>f:</b>	<b>4</b>	<b>8</b>	<b>14</b>	<b>11</b>	<b>3</b>

**Solution:**

x	f	fx
5	4	20
6	8	48
7	14	98
8	11	88
9	3	27
	N = 40	$\Sigma fx = 281$

Mean =  $\Sigma fx / N = 281/40$

$\therefore$  Mean = 7.025

2. Find the mean of the following data:

<b>x:</b>	<b>19</b>	<b>21</b>	<b>23</b>	<b>25</b>	<b>27</b>	<b>29</b>	<b>31</b>
<b>f:</b>	<b>13</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>15</b>	<b>13</b>

**Solution:**

x	f	fx
19	13	247
21	15	315
23	16	368
25	18	450
27	16	432
29	15	435
31	13	403
	N = 106	$\Sigma fx = 2620$

Mean =  $\Sigma fx / N = 2620/106$

$\therefore$  Mean = 25

3. If the mean of the following data is 20.6. Find the value of p.

<b>x:</b>	<b>10</b>	<b>15</b>	<b>p</b>	<b>25</b>	<b>35</b>
<b>f:</b>	<b>3</b>	<b>10</b>	<b>25</b>	<b>7</b>	<b>5</b>

**Solution:**

x	f	fx
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10	3	30
15	10	150
p	25	25p
25	7	175
35	5	175
	$N = 50$	$\Sigma fx = 530 + 25p$

We know that,

$$\text{Mean} = \Sigma fx / N = (2620 + 25p) / 50$$

Given,

$$\text{Mean} = 20.6$$

$$\Rightarrow 20.6 = (530 + 25p) / 50$$

$$(20.6 \times 50) - 530 = 25p$$

$$p = 500 / 25$$

$$\therefore p = 50$$

**4. If the mean of the following data is 15, find p.**

<b>x:</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
<b>f:</b>	<b>6</b>	<b>p</b>	<b>6</b>	<b>10</b>	<b>5</b>

**Solution:**

x	f	fx
5	6	30
10	p	10p
15	6	90
20	10	200
25	5	125
	$N = p + 27$	$\Sigma fx = 445 + 10p$

We know that,

$$\text{Mean} = \Sigma fx / N = (445 + 10p) / (p + 27)$$

Given,

$$\text{Mean} = 15$$

$$\Rightarrow 15 = (445 + 10p) / (p + 27)$$

$$15p + 405 = 445 + 10p$$

$$5p = 40$$

$$\therefore p = 8$$

**5. Find the value of p for the following distribution whose mean is 16.6**

<b>x:</b>	<b>8</b>	<b>12</b>	<b>15</b>	<b>p</b>	<b>20</b>	<b>25</b>	<b>30</b>
<b>f:</b>	<b>12</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>16</b>	<b>8</b>	<b>4</b>

**Solution:**

x	f	fx
8	12	96
12	16	192
15	20	300
P	24	24p
20	16	320
25	8	200
30	4	120
	N = 100	$\Sigma fx = 1228 + 24p$

We know that,

$$\text{Mean} = \Sigma fx / N = (1228 + 24p) / 100$$

Given,

$$\text{Mean} = 16.6$$

$$\Rightarrow 16.6 = (1228 + 24p) / 100$$

$$1660 = 1228 + 24p$$

$$24p = 432$$

$$\therefore p = 18$$

**6. Find the missing value of p for the following distribution whose mean is 12.58**

<b>x:</b>	<b>5</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>p</b>	<b>20</b>	<b>25</b>
<b>f:</b>	<b>2</b>	<b>5</b>	<b>8</b>	<b>22</b>	<b>7</b>	<b>4</b>	<b>2</b>

**Solution:**

x	f	fx
5	2	10
8	5	40
10	8	80
12	22	264
P	7	7p
20	4	80
25	2	50
	N = 50	$\Sigma fx = 524 + 7p$

We know that,

$$\text{Mean} = \Sigma fx / N = (524 + 7p) / 50$$

Given,

$$\text{Mean} = 12.58$$

$$\Rightarrow 12.58 = (524 + 7p) / 50$$

$$629 = 524 + 7p$$

$$7p = 629 - 524 = 105$$

$$\therefore p = 15$$

**7. Find the missing frequency (p) for the following distribution whose mean is 7.68**

x:	3	5	7	9	11	13
f:	6	8	15	p	8	4

**Solution:**

x	f	fx
3	6	18
5	8	40
7	15	105
9	p	9p
11	8	88
13	4	52
	$N = 41 + p$	$\Sigma fx = 303 + 9p$

We know that,

$$\text{Mean} = \Sigma fx / N = (303 + 9p) / (41 + p)$$

Given,

$$\text{Mean} = 7.68$$

$$\Rightarrow 7.68 = (303 + 9p) / (41 + p)$$

$$7.68(41 + p) = 303 + 9p$$

$$7.68p + 314.88 = 303 + 9p$$

$$1.32p = 11.88$$

$$\therefore p = 11.88 / 1.32 = 9$$