

Ans 1

$$145 = 5$$

$$2459 = 1$$

$$56986 = 6$$

Ans 2

$$145 = 5$$

$$2459 = 1$$

$$56986 = 6$$

Ans 3

$$(123)^2 = 9$$

$$(77)^2 = 9$$

$$(82)^2 = 4$$

$$(161)^2 = 1 \checkmark$$

Ans 4

2	144	$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$
2	72	$\sqrt{144} = \sqrt{2^2 \times 2^2 \times 3^2}$
2	36	$\sqrt{144} = 2 \times 2 \times 3$
2	18	$\sqrt{144} = 12$
3	9	
3	3	
	<b>1</b>	

$$\begin{array}{r|l} 5 & 625 \\ 3 & 123 \\ & 41 \end{array}$$

$$\begin{array}{r|l} 5 & 625 \\ 5 & 125 \\ 5 & 25 \\ 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 625 &= 5 \times 5 \times 5 \times 5 \\ \sqrt{625} &= \sqrt{5^4 \times 5^0} \\ \sqrt{625} &= 5 \times 5 \\ \sqrt{625} &= 25 \end{aligned}$$

Hence square root of 144 = 12

Ans 5

$$\begin{array}{r|l} 2 & 252 \\ 2 & 126 \\ 3 & 63 \\ 3 & 21 \\ 7 & 7 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 252 &= 2 \times 2 \times 3 \times 3 \times 7 \\ 252 &= 2^2 \times 3^2 \times 7 \\ 252 \times 7 &= 2^2 \times 3^2 \times 7^2 \\ \sqrt{1764} &= \sqrt{2^2 \times 3^2 \times 7^2} \\ \sqrt{1764} &= 2 \times 3 \times 7 \\ \sqrt{1764} &= 42 \end{aligned}$$

$$\text{Ans 6 } (52)^2 - (51)^2$$

$$= 52 \times 2 + 1$$

$$= 104 + 1$$

$$= 105$$

$$\text{ii } (71)^2 - (72)^2$$

$$= 71 \times 2 + 1$$

$$= 142 + 1$$

$$= 143$$

$$\text{iii } (101)^2 - (100)^2$$

$$= 100 \times 2 + 1$$

$$= 200 + 1$$

$$= 201$$

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Ans 7 Numbers that lie between 15 and 16 =  $15 \times 2 + 1$   
 $= 30 + 1$   
 $(12) = 31$

~~Ans~~ Numbers that lie between 27 and 28 =  $27 \times 2 + 1$   
 $1 + 54 + 1 = 54 + 1$   
 $55$

$$p + q = 31 + 55$$
$$= 86$$

Ans	2	50176	$50176 = \overbrace{2 \times 2} \times \overbrace{2 \times 2} \times \overbrace{2 \times 2} \times \overbrace{2 \times 2} \times \overbrace{2 \times 2} \times \overbrace{7 \times 7}$
	2	25088	
	2	12544	$\sqrt{50176} = \sqrt{2^2 \times 2^2 \times 2^2 \times 2^2 \times 2^2 \times 7^2}$
	2	6272	$\sqrt{50176} = 2 \times 2 \times 2 \times 2 \times 2 \times 7$
	2	3136	$\sqrt{50176} = 224$
	2	1568	
	2	784	
	2	392	
	2	196	
	2	98	
	7	14	
	7	2	
		1	

6	5	21025	$21025 = 5 \times 5 \times 29 \times 29$
	5	4205	$\sqrt{21025} = \sqrt{5^2 \times 29^2}$
	29	841	$\sqrt{21025} = 145$
	29	29	
		1	

Ans 9

3	680625	$680625 = 3 \times 3 \times 5 \times 5 \times 5 \times 5 \times$
3	226875	$11 \times 11$
<del>5</del>	75625	$680625 = 3^2 \times 5^2 \times 5^2 \times 11^2$
5	15125	$\sqrt{680625} = \sqrt{3^2 \times 5^2 \times 5^2 \times 11^2}$
5	3025	$\sqrt{680625} = 3 \times 5 \times 5 \times 11$
5	605	$\sqrt{680625} = 825$
11	121	
11	11	
	1	

Hence the number of students = 825

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Ans 10	2	1000
	2	500
	2	250
	5	125
	5	25
	5	5
		1

$$1000 = 2 \times 2 \times 2 \times 5 \times 5 \times 5$$

$$1000 = 2^2 \times 5^2 \times 2 \times 5$$

$$1000 \times 2 = 2^2 \times 5^2 \times 2 \times 2 \times 5$$

$$2000 = 2^2 \times 5^2 \times 2^2 \times 5$$

$$2000 \times 5 = 2^2 \times 5^2 \times 2^2 \times 5 \times 5$$

$$10000 = 2^2 \times 5^2 \times 2^2 \times 5^2$$

$$\sqrt{10000} = \sqrt{2^2 \times 5^2 \times 2^2 \times 5^2}$$

$$\sqrt{10000} = 2 \times 2 \times 5 \times 5$$

$$\sqrt{10000} = 100$$