

Time and Work	
Q.No	Answer
Type I – Formula Method	
1	<p>Correct answer :(a)  <b>Hint:</b> If 'w<sub>1</sub>' work is done by 'm<sub>1</sub>' men by working for 'h<sub>1</sub>' hours per day in 'd<sub>1</sub>' days &amp; 'w<sub>2</sub>' is work done by men 'm<sub>2</sub>' working for 'h<sub>2</sub>' hours per day in 'd<sub>2</sub>' days, then</p> $\frac{m_1 d_1 h_1}{w_1} = \frac{m_2 d_2 h_2}{w_2}$ <p>Since we need to find 'd<sub>2</sub>', we can re-arrange the formula as,</p> $d_2 = \frac{m_1 d_1 h_1 w_1}{m_2 h_2 w_1}$ $= \frac{6 \times 7 \times 7 \times 18}{14 \times 9 \times 12}$ $= 3.5 \text{ days}$
2	<p><b>Option D</b>  <b>Solution:</b>  Ram : Mohan = 6:5  R+M = 11  R+M = 1575 * 275 / 15 * 25 = 1155 words in 1 hour  ram will type = 1155 * 6/11 = 630 words in 1 hour</p>
3	<p>Correct Option: B  To solve this question, we can apply a short trick approach;</p> <p><b>If M<sub>1</sub> persons can do a piece of work in D<sub>1</sub> days working H<sub>1</sub> hours a day and M<sub>2</sub> persons can do the same work in D<sub>2</sub> days working H<sub>2</sub> a day then we have a short-trick formula which is M<sub>1</sub>D<sub>1</sub>H<sub>1</sub> = M<sub>2</sub>D<sub>2</sub>H<sub>2</sub></b>  Given:  M<sub>1</sub> = 50, D<sub>1</sub> = 12 days, H<sub>1</sub> = 6 hours/day  M<sub>2</sub> = 60, D<sub>2</sub> = 8 days, H<sub>2</sub> = ?  Now, as  M<sub>1</sub>D<sub>1</sub>H<sub>1</sub> = M<sub>2</sub>D<sub>2</sub>H<sub>2</sub>  50 × 12 × 6 = 60 × 8 × ?  ⇒ ? = <math>\frac{50 \times 12 \times 6}{60 \times 8} = \frac{60}{8}</math>  = <math>\frac{15}{2} = 7\frac{1}{2}</math> hours  Hence, option B is correct.</p>
4	<p><b>Option A</b>  <b>Solution:</b>  x*30=(x-10)*60 =&gt; x=20 men  now 20*30=x*20 =&gt;x=30 men</p>
5	<p><b>Option A</b>  <b>Solution:</b>  40*25/1/3 = (40+x) * 25/2/3  80 = 40+x  X= 40 Ans</p>
6	<p><b>Option B</b>  <b>Solution:</b>  Total work – 30*30 = 900  1st 10 day work – 20*10 = – 200  ... 700  Now 700 work have to complete in 20 days.  So – 700/20= 35 men will be require. 30 men are already working so now we need only 5 men.</p>
Type II – Variable given (2 or 3 variables)	
1	<p>Correct Option: C  To solve this question, we can apply a short trick approach;</p> <p><b>If A can do a piece of work in x days and B can do it in y days then A and B working together will do the same work in work in</b></p>

	<p><math>(\frac{xy}{x+y})</math> days.</p> <p>A's time = x = 20 days</p> <p>B's time = y = 15 days</p> <p>By the short trick approach:</p> <p>A + B can do the work in <math>\frac{20 \times 15}{20 + 15}</math> days</p> <p><math>= \frac{300}{35} = \frac{60}{7} = 8\frac{4}{7}</math> days</p> <p>Hence, option C is correct.</p>
2	<p>Correct Option: D</p> <p>To solve this question, we can apply a short trick approach;</p> <p><b>If A can do a piece of work in x days and B can do it in y days then A and B working together will do the same work in</b></p> <p><math>(\frac{xy}{x+y})</math> days.</p> <p>Given:</p> <p>A's time = x = 20 days, B's time = y = 30 days</p> <p>By the short trick approach:</p> <p>A + B can do the work in</p> <p><math>\frac{20 \times 30}{20 + 30}</math> days</p> <p><math>= \frac{600}{50} = 12</math> days.</p> <p>Hence, option D is correct.</p>
3	<p><b>Option B</b></p> <p><b>Solution:</b></p> <p>A – 2/5 work in 8 days =&gt; total= 8*5/2= 20 days</p> <p>B- 3/5 work in 18 days =&gt; total- 30 days</p> <p>A+B together = 30*20/50 = 12 days</p> <p>hence 3/4 * 12=9 days</p>
4	<p>Correct Option: C</p> <p>To solve this question, we can apply a short trick approach;</p> <p><b>If A, B and C can do a work in x, y and z days respectively then all of them working together can finish the work in</b></p> <p><math>(\frac{xyz}{xy + yz + zx})</math>days</p> <p>Given:</p> <p>Time taken by A = x = 12 days</p> <p>Time taken by B = y = 24 days</p>

	<p>Time taken by C = z = 36 days</p> <p>By the short trick approach:</p> <p>A, B and C can do the work in</p> $= \frac{12 \times 24 \times 36}{12 \times 24 + 24 \times 36 + 36 \times 12}$ <p>After taking 24 as a common term we get,</p> $= \frac{12 \times 36}{12 + 36 + 18}$ <p>After taking 6 as a common term we get,</p> $= \frac{2 \times 36}{2 + 6 + 3} = \frac{72}{11} = 6\frac{6}{11}$ <p>Hence, option C is correct.</p>
5	<p>Correct Option: D</p> <p>Since Typewriter B can do the job in 15 hours,</p> <p>it can do <math>\frac{1}{15}</math> of the job in 1 hour.</p> <p>Since Typewriter C can do the job in 18 hours</p> <p>it can do <math>\frac{1}{18}</math> of the job in 1 hour.</p> <p>Together Typewriters B and C can do</p> $\left(\frac{1}{15} + \frac{1}{18}\right) = \left(\frac{6}{90} + \frac{5}{90}\right) = \frac{11}{90} \text{ of the job in 1 hour}$ <p>Which means that it takes them = <math>\frac{90}{11}</math> hours</p> <p>to complete the job. Since Typewriter A completes the job in 12 hours, the ratio of the time required for A to do the job to the time required for B and C working together to do the job is</p> $\frac{12}{\frac{90}{11}} = \frac{12(11)}{90} = \frac{2(11)}{15} = \frac{22}{15}$ <p>Hence, option (D) is correct.</p>
6	<p><b>Answer:</b> A) 60/11</p> <p><b>Explanation:</b></p> <p>P can complete the work in (12 x 8) hrs = 96 hrs</p> <p>Q can complete the work in (8 x 10) hrs=80 hrs</p> <p>Therefore, P's 1 hour work=1/96 and Q's 1 hour work= 1/80</p> <p>(P+Q)'s 1 hour's work =(1/96) + (1/80) = 11/480. So both P and Q will finish the work in 480/11 hrs</p> <p>Therefore, Number of days of 8 hours each = (480/11) x (1/8) = 60/11</p>
7	<p>Correct Option: D</p> <p>To solve this question, we can apply a short trick approach;</p> <p><b>B alone will do the same work in</b></p> <p>[ <u>2xyz</u> ]hours.</p>

	<p><b><math>yz + zx - xy</math></b></p> <p>A and B together finish a piece work = <math>x = 10</math> hours</p> <p>B and C together finish a piece work = <math>y = 15</math> hours</p> <p>C and A together finish a piece work = <math>z = 12</math> hours</p> <p>By the short trick approach: B can do the work in</p> $= \frac{2 \times 10 \times 15 \times 12}{15 \times 12 + 10 \times 12 - 10 \times 15} \text{ days}$ <p>After taking 5 as a common term, we get</p> $= \frac{2 \times 2 \times 15 \times 12}{3 \times 12 + 2 \times 12 - 2 \times 15} \text{ days}$ $= \frac{2 \times 30 \times 12}{36 + 24 - 30}$ $= \frac{2 \times 30 \times 12}{30} = 24 \text{ hrs}$
8	<p><b>Option D</b></p> <p><b>Solution:</b>          (total work=360)  <math>A+B=72</math>—————5  <math>B+C=120</math>—————3  <math>C+A=90</math>—————4  <math>\Rightarrow 2(A+B+C)=12</math>  <math>A+B+C=6</math>          total days=360/6=60 days</p>
9	<p>Correct Option: C</p> <p>Work done by Mason in 1 h</p> $= \frac{1}{12}$ <p>Work done by Mason in 6 h</p> $= \frac{6}{12} = \frac{1}{2}$ <p><math>\therefore</math> Remaining work</p> $= 1 - \frac{1}{2} = \frac{1}{2}$ <p>Now, let the boys finish the work in <math>x</math> h</p> <p>Then, work done by Mason and boy in 1 h</p> $= \frac{1}{12} + \frac{1}{x} = \frac{x+12}{12x}$ <p>Then, work done by Mason and boy in 5 h</p> $= 5 \times \frac{x+12}{12x} = \frac{1}{2}$ $\Rightarrow \frac{5x+60}{12x} = \frac{1}{2}$

	$\Rightarrow 10x + 120 = 12x \Rightarrow x = 60 \text{ h.}$ Hence, option C is correct.
10	<p>Correct Option: E</p> <p>To solve this question, we can apply a short trick approach;</p> <p><b>If A and B together can do a piece of work in x day and A alone can do it in y days, then B alone can do the work in <math>\frac{xy}{y-x}</math> days.</b></p> <p>Given:</p> <p>A and B together finish a piece of work = x = 4 days</p> <p>A alone finish a piece of work = y = 12 days.</p> <p>By the short trick approach:</p> <p>B alone can do the whole work in</p> $\frac{4 \times 12}{12 - 4} = \frac{48}{8} = 6 \text{ days}$ <p>Hence, option E is correct.</p>
11	<p><b>Answer:</b> C) Half work</p> <p><b>Explanation:</b></p> <p>A can do the work = 18 days</p> <p>B can do the work = <math>18/2 = 9</math> days</p> <p>(A + B)'s 1 day work = <math>1/18 + 1/9 = 1/6</math></p> <p><math>\Rightarrow</math> In 3 days = <math>3 \times 1/6 = 1/2</math> work is completed.</p>
12	<p>Correct Option: C</p> <p>Q's 8 days work = <math>[\frac{1}{20} \times 8] \Rightarrow \frac{2}{5}</math></p> <p>Remaining work = <math>[1 - \frac{2}{5}] \Rightarrow \frac{3}{5}</math>.</p> <p>Now, <math>\frac{1}{25}</math> work is done by P in 1 day.</p> <p><math>\therefore \frac{3}{5}</math> work is done by P in <math>[25 \times \frac{3}{5}] \Rightarrow 15</math> days.</p> <p>Hence, option C is correct.</p>
13	<p>Correct Option: D</p> <p>A's and B's 2 day's work</p> $= \frac{2}{8} + \frac{2}{10} = \frac{18}{40} = \frac{9}{20}$ <p><math>\therefore</math> Remaining work</p> $= 1 - \frac{9}{20} = \frac{11}{20}$ <p>Work done by B + C in 1 day</p> $= \frac{1}{10} + \frac{1}{15} = \frac{5}{30} = \frac{1}{6}$

	<p>Since, (B + C) finish a work in 6 days.</p> $\therefore \frac{11}{20} \text{ work together} = 6 \times \frac{11}{20}$ $= \frac{11 \times 3}{10} = \frac{33}{10} \text{ days}$ <p><math>\therefore</math> Total number of days</p> $= 2 + \frac{33}{10} = \frac{53}{10} \text{ days}$ <p>Hence, option D is correct.</p>
14	<p><b>Answer:</b> C) 80</p> <p><b>Explanation:</b></p> <p>Let A's 1 day's work=x and B's 1 day's work=y  Then <math>x+y = 1/40</math> and <math>20x+60y=1</math>  Solving these two equations , we get : <math>x= 1/80</math> and <math>y= 1/80</math>  Therefore B's 1 day work = <math>1/80</math>  Hence,B alone shall finish the whole work in 80 days</p>
15	<p><b>Answer:</b> D) 64 days</p> <p><b>Explanation:</b></p> <p>(P+Q)'s 1 day work = <math>1/24</math>  P's 1 day work = <math>1/32</math>  <math>\Rightarrow</math> Q's 1 day work = <math>1/24 - 1/32 = 1/96</math>  Work done by (P+Q) in 8 days = <math>8/24 = 1/3</math>  Remaining work = <math>1 - 1/3 = 2/3</math>  Time taken by Q to complete the remaining work = <math>2/3 \times 96 = 64</math> days.</p>
16	<p><b>Option A</b></p> <p><b>Solution:</b></p> <p>A= 30 _____ 4 (Total=120)  B=40 _____ 3  A+B=7  in 12 days <math>7 \times 12=84</math> work is done. Remaining =<math>120-84=36</math>  this is done by C in 3 days. Means C does 12 work in 1 day. Means 120 work in <math>120/12=10</math> days</p>
17	<p><b>Option B</b></p> <p><b>Solution:</b></p> <p>A=25 _____ 2 (Total work=50)  B=50 _____ 1  A+B = _____3  A and B did the work for <math>14-4=10</math> days  <math>(A+B) \times 10=3 \times 10= 30</math> work  remaining work=<math>50-30=20</math>  C did 20 work in 4 days;  1 day = 5 work  so 50 work in 10 days</p>
18	<p><b>Option E</b></p> <p><b>Explanation:</b></p> <p>They work for 4 days. So complete  <math>(1/12 + 1/20) \times 4 = 8/15</math> of work  Now: In next 2 days all A, B, C completed  <math>(1/12 + 1/20 + 1/24) \times 2 = 7/20</math> of work  So total work completed = <math>8/15 + 7/20 = 53/60</math>  So remaining work = <math>1 - 53/60 = 7/60</math></p>
19	<p><b>Option D</b></p> <p><b>Solution:</b></p>

	<p> <math>A+B=30</math>  let total work =30  1 day work of <math>A+B=1</math>  10 days – 10  remaining work =20  A did 20 work in 40 days  so 30 work is done in 60 days  <math>A+B=30</math> ——— 2 (total work =60)  A =60 ——— 1  <math>B= 2-1=1 \Rightarrow 60/1= 60</math> days </p>
20	<p> <b>Option C</b>  <b>Solution :</b>  <math>A+B=21</math> days  Let total work = 21  <math>A+B</math> 1 day work = 1  7 day work = 7  remaining work = <math>21-7 = 14</math>  B did 14 work in 56 days  1 work in 4 days  21 work in 84 days  <math>A+B = 21</math>  <math>B = 84</math> hence A will be 28 </p>
21	<p> <b>Option D</b>  <b>Solution:</b>  <math>(1/24 + 1/30) * 6 + (1/24 + 1/Rohit) * 11 = 1</math>  Therefore ,Rohit takes 120 days to finish the work. </p>
22	<p> <b>Option A</b>  <b>Solution:</b>  Total work = 60 units  A takes = 6 units/day  B takes = 5 units/day  C takes = 4 units/day  Now ,  <math>(x-5)/10 + (x-3)/12 + x/15 = 1</math>  <math>\Rightarrow x = 7</math> days </p>
<b>Type III – Efficiency Based Questions</b>	
1	<p> <b>Option A</b>  <b>Solution:</b>  A is half efficient so takes double days than B. So B can alone complete job in 12 days.  So together in <math>24 \times 12 / (24+12) = 8</math> days </p>
2	<p> <b>Option D</b>  <b>Solution:</b>  A completes 40% of work in 12 days so 60% of the work has to be completed by A and B.  They together take 12 days to complete 60% of work.  So working together, they can complete whole work in <math>12/60 \times 100 = 20</math> days  A completed 40% work in 12 days, he can complete whole work in <math>12/40 \times 100 = 30</math> days  Let B takes x days to complete whole work. So,  <math>1/30 + 1/x = 1/20</math>  Solving we get <math>x = 60</math>  Now A completes whole work in 30 days. B in 60 days so A is twice or 100% efficient than B. </p>
3	<p> Correct Option: C  P's 1 days' work) : (Q's 1 days' work) = 3 : 1  <math>(P + Q)'s = 1</math> days work = <math>\frac{1}{24}</math>  Divide <math>\frac{1}{24}</math> in the ratio 3 : 1  P's 1 day's work  <math>= [\frac{1}{24} \times \frac{3}{4}] \Rightarrow \frac{1}{32}</math> </p>

	Hence, P alone can finish the work in 32 days. Hence, option C is correct.																								
4	Correct answer : (b) <b>Hint:</b> If 'A' is 'x' times as good a workman as 'B', then ratio of work done by A & B = x: 1 Monika's 1 day work : Sonika's 1 day work = 2:1 (Monika's + Sonika's ) 1 day work = 1 /20  Divide 1/20 in the ratio 2:1 -----( To divide the number 'a' into ratio x & y , we have first part = ax / x + y )  Therefore, Monika's 1 day work = $\left( \frac{1}{20} \right) \times \left( \frac{2}{2} + 1 \right) = \frac{1}{30}$  Hence, Monika will alone finish the work in 30 days.																								
5	<b>Answer:</b> B) 6 days  <b>Explanation:</b>  Ratio of rates of working of A and B =2:1. So, ratio of times taken =1:2 Therefore, A's 1 day's work=1/9 B's 1 day's work=1/18 (A+B)'s 1 day's work= 1/9 + 1/18 = 1/6 so, A and B together can finish the work in 6 days																								
6	<b>Answer:</b> A) 2:6:3 <b>Explanation:</b>  <table><tr><td></td><td>A</td><td>:</td><td>B</td><td>:</td><td>C</td></tr><tr><td>Ratio of efficiency</td><td>3</td><td>:</td><td>1</td><td>:</td><td>2</td></tr><tr><td>Ratio of No.of days</td><td>1/3</td><td>:</td><td>1/1</td><td>:</td><td>1/2</td></tr><tr><td>or</td><td>2</td><td>:</td><td>6</td><td>:</td><td>3</td></tr></table> Hence A is correct.		A	:	B	:	C	Ratio of efficiency	3	:	1	:	2	Ratio of No.of days	1/3	:	1/1	:	1/2	or	2	:	6	:	3
	A	:	B	:	C																				
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or	2	:	6	:	3																				
7	<b>Option D</b> <b>Explanation:</b> Let total work = 2 +3 + 5 = 10 So A completes 2 units of work in 12 days, so whole 10 units he can do in 10/2 *12 = 60 days Now ratio of their efficiencies = 1 : 2 : 3 So days ratio = 1/1 : 1/2 : 1/3 = 6 : 3 : 2 So 6x = 60, x = 10 So A can complete work in 60 days, B in 3*10 = 30 days, C in 2*10 = 20 days So work together in 8 days = (1/60 + 1/30 + 1/20) * 8 = 4/5																								
8	<b>Option D</b> <b>Solution :</b> B= 50% more efficient than A hence A:B=150:100=3:2=30:20 (in terms of day) A+B = 5 C = 20% = 1/5 C = 1 1 = 10 A : B : C = 3 : 2 : 1 C = 1 = 10 days																								
9	<b>Answer:</b> C) 13 days <b>Explanation:</b> Ratio of times taken by A and B = 100 : 130 = 10 : 13. Suppose B takes x days to do the work. Then, 10 : 13 :: 23 : x   =>   x = ( 23 x 13/10 )   =>   x = 299 /10. A's 1 day's work = 1/23 ; B's 1 day's work = 10/299 . (A + B)'s 1 day's work = ( 1/23 + 10/299 ) = 23/299 = 113 . Therefore, A and B together can complete the work in 13 days.																								
Type III – Alternate Working																									



1	<p><b>Answer:</b> D) 3 pm</p> <p><b>Explanation:</b></p> <p>Work done by P and Q in the first two hours, working alternately  = First hour P + Second hour Q  <math>\Rightarrow 1/4 + 1/12 = 1/3</math>  work is completed in 2 hours  Then, the total time required to complete the work by P and Q working alternately = <math>2 \times 3 = 6</math> hours  Thus, work will be completed at 3pm.</p>
2	D
3	<b>E None of these 11 1/3</b>
4	<p><b>Option C</b></p> <p><b>Solution:</b>  A = 18, B = 30, C = 45  LCM = 90  A = <math>90/18 = 5</math>, B = 3, C = 2  1st day.....2nd day.....3rd day  A=5.....C=2.....B=3+3  than  4 days work = <math>5 + 2 + 6 = 13</math>  Make it near total (90)  <math>4 \times 6</math>..... <math>13 \times 6</math>  24.....78  A -&gt; 1 .....5  B -&gt; 1.....2  C -&gt; 1.....3  Add  <math>24 + 1 + 1 + 1 = 27</math> days..... <math>(78 + 5 + 2 + 3) = 88</math> days  Now <math>90 - 88 = 2</math> work pending  B does 3 work in 1 day, so 2 in <math>2/3</math>. So total <math>27 \frac{2}{3}</math> days</p>
5	<p><b>Answer:</b> D) 117 days</p> <p><b>Explanation:</b>  K's work in a day(1st day) = <math>1/30</math>  L's work in a day(2nd day) = <math>-1/60</math>(demolishing)  hence in 2 days, combined work = <math>1/30 - 1/60 = 1/60</math>  since both works alternatively, K will work in odd days and L will work in even days.  <math>1/60</math> unit work is done in 2 days  <math>58/60</math> unit work will be done in <math>2 \times 58</math> days = 116 days  Remaining work = <math>1 - 58/60 = 1/30</math>  Next day, it will be K's turn and K will finish the remaining <math>1/30</math> work.  Hence total days = <math>116 + 1 = 117</math>.</p>
6	<p>ANS- B</p> <p>A, B and C can do a piece of work in 11 days, 20 days and 55 days respectively, working Alone. How soon can the work be done if A is assisted by B and C on every third day?  (A+B)'s 1 day's work = <math>(1/11 + 1/20) = 31/220</math>  . A + C 's work = <math>1/11 + 1/55 = 6/55</math>  Work done in 2 days = <math>(31/220 + 6/55) = 55/220 = 1/4</math>  Now,  <math>\frac{1}{4}</math> work is done by A in 2 days.  Whole work will be done in <math>(2 \times 4) = 8</math> days.</p>
7	<p>ANS - B</p> <p>A, B and C can separately do a piece of work in 20, 30 and 60 days respectively. In how Many days can A do the work if he is assisted by B and C on alternative days? A's 2 day's work = <math>(1/20 \times 2) = 1/10</math>  (A+B+C)'s 1 day's work = <math>(1/20 + 1/30 + 1/60) = 6/60 = 1/10</math>  Work done in 3 days = <math>(1/10 + 1/10) = 1/5</math></p>

	Now, 1/5 work is done in 3 days Whole work will be done in $(3 \times 5) = 15 \text{ days}$
<b>Type IV - Wages</b>	
1	<b>Answer:</b> A) 120  <b>Explanation:</b> $1/15 + 1/12 + 1/R = 1/6$ , we got $R = 60$ (it means R will take 60 days to complete the work alone) so ratio of work done by P:Q:R = $1/15 : 1/12 : 1/60 = 5 : 4 : 1$ so R share = $(1/10) \times 1200 = 120$ .
2	<b>Answer:</b> C) 1600
3	<b>Answer:</b> C) 4860
4	Correct Option: A A can do 10% work in a day. A has worked 6 days in total. And so has B  A completed 60% work in 6 days and B did 40% in 6 days.  Efficiency of A and B = 6 : 4  B's share = $\frac{4}{10} \times 54000 = 21600$  Hence, option A is correct.
5	<b>Answer – C. 100</b> <b>Explanation :</b> Efficiency of Kiran = 5% Efficiency of Karan = 4% They will complete only 90% of the work = $[(5+4) \times 10] = 90$ Remaining work done by Suman = 10%. Share of Suman = $10/100 \times 1000 = 100$
6	<b>Answer – A. 600, 400, 500</b> <b>Explanation :</b> A's 5 days' work = 50% B's 5 days work = 33.33% C's 2 days work = $16.66\%[100 - (50+33.33)]$ Ratio of contribution of work of Arun, Bala and Chitra = 3 : 2 : 1 Arun's total share = Rs. 3000 Bala's total share = Rs. 2000 Chitra's total share = Rs. 1000 Arun's one day's earning = Rs.600 Bala's one day's earning = Rs.400 Chitra's one day's earning = Rs.500
<b>Type V - Equation</b>	
1	<b>Answer:</b> B) 2:1 <b>Explanation:</b> $(10 \times 6)$ women can complete the work in 1 day. Therefore, 1 woman's 1 day's work = $1/60$ $(6 \times 5)$ men can complete the work in 1 day. Therefore, 1 man's 1 day's work = $1/30$ so, required ratio = $1/30 : 1/60 = 2:1$
2	<b>Answer:</b> B) 18 <b>Explanation:</b> Clearly total persons are increased in $28/35 :: 52/65 = 4:5$ . As time is inversely proportional to men, so total <b>time</b> will decrease in the ratio 5:4. Hence, $22.5 \times 4/5 = 18 \text{ days}$ .
3	<b>Answer:</b> C) 7 days <b>Explanation:</b> 1 boy's 1 day work = $1/70$ 1 girl's 1 day work = $1/140$ $(5 \text{ boys} + 10 \text{ girls})$ 's 1 day work = $(5/70 + 10/140) = (1/14 + 1/14) = 1/7$ 5 boys and 10 girls will complete the work in 7 days.
4	Correct Option: A

	<p>5 Men = 6 days</p> <p>2 Men = <math>\frac{6 \times 5}{2} = 15</math> days</p> <p>6 Women = 10 days</p> <p>3 Women = <math>\frac{10 \times 6}{3} = 20</math> days</p> <p>3 Children = 8 days</p> <p>1 Children = <math>8 \times 3 = 24</math> days</p> <p>Total work = LCM of 15, 20 and 24 = 120</p> <p>2 Men's one day's work = 8</p> <p>3 Women's one day's work = 6</p> <p>1 Child's one day's work = 5</p> <p>Total work of 3 days = 19</p> <p>Total work of 18 days = 114</p> <p>Now, it's 2 Men's terms</p> <p>So, 2 Men will be the last to complete the work.</p> <p>Hence, option (A) is correct.</p>
5	<p><b>B) 3/7</b></p> <p><b>Explanation:</b></p> <p>20 m in 14 days so 10 men in <math>(20 \times 14)/10 = 28</math> days</p> <p>20 w in 18 days so 10 women in <math>(20 \times 18)/10 = 36</math> days</p> <p>So <math>(1/28 + 1/36) \times 9 = 4/7</math></p> <p>So <math>1 - 4/7 = 3/7</math> work was done by 7 men and 9 women</p>
6	<p><b>Option B</b></p> <p><b>Solution :</b></p> <p><math>32 M + 24 W = 2</math></p> <p><math>\Rightarrow 64M + 48 W = 1</math> day — (i)</p> <p><math>13 M + 18 W = 4</math> day</p> <p><math>\Rightarrow 52 M + 72 W = 1</math> day — (ii)</p> <p>using (i) and (ii)</p> <p><math>1 M = 2W</math></p> <p>put it in eq 1</p> <p><math>1 M = 88</math></p> <p><math>\Rightarrow 11</math> men = 8 days</p>
7	<p><b>Option E</b></p> <p><b>Solution:</b></p> <p><math>5 M + 7W = 13</math> days</p> <p><math>65 M + 91 W = 1</math> day.....(1)</p> <p><math>4 M + 6 W = 16</math> days</p> <p><math>64 M + 96 W = 1</math> day.....(2)</p> <p>From (1) and (2)</p> <p><math>1 M = 5W</math></p> <p>Put in 1, <math>5M = 25W</math></p> <p>So <math>25W + 7W = 13</math> days</p> <p><math>32 W = 13</math></p> <p><math>1 W = 13 \times 32</math> days</p> <p>So <math>16 W = 13 \times 32 / 16 = 26</math> days</p>
<b>Type VI – Garrisons formula</b>	

1	<p><b>Answer:</b> B) 10 days</p> <p><b>Explanation:</b>  Quantity of food = <math>200 \times 31 = 6200</math> man-days  Till 27 days, quantity consumed = <math>27 \times 200 = 5400</math> man-days  Remaining quantity = <math>6200 - 5400 = 800</math> man days  Remaining soldiers = <math>200 - 120 = 80</math>  Let remaining food will be sufficient for x days <math>\Rightarrow 5400 + 80x = 6200 \Rightarrow x = 10</math> day</p>
2	<p><b>Answer: A) 1900</b></p> <p><b>Explanation:</b>  Given 2000 ---- 54 days  The provisions for 2000 men for 39 days can be completed by 'm' men for only 20 days.  i.e, 2000 ----- 39 days == m ---- 20 days  <math>\Rightarrow m \times 20 = 2000 \times 39</math>  <math>m = 3900</math>  So total men for 20 days is 3900  <math>\Rightarrow</math> 2000 old and 1900 new reinforcement.  Hence, reinforcement = 1900.</p>
3	<p><b>C</b></p> <p><b>Solution</b></p> <p><b>Given</b></p> <ul style="list-style-type: none"> <li>• A garrison has sufficient food for 75 soldiers for a period of 90 days</li> <li>• After 10 days, one-third of the soldiers leave</li> <li>• After another 10 days, 5 soldiers return</li> </ul> <p><b>To find</b></p> <ul style="list-style-type: none"> <li>• How many more days will the food last?</li> </ul> <p><b>Approach and Working out</b>  Food left after the first lot of soldiers left = <math>75 \times 90 - 75 \times 10 = 6000</math>  Food left after the second lot of soldiers left = <math>6000 - (75 \times \frac{2}{3}) \times 10 = 5500</math>  • The remaining days = <math>5500 / (50 + 5) = 100</math> days  Thus, option C is the correct answer.</p>
4	<p><b>Option E</b></p> <p><b>Solution:</b>  <math>100 \times 10</math> days = 1000  Now <math>1000 / 200 = 5</math> days (Initial total no. of men engaged in the project)  Hence ,5 more days required to finish the work if 100 more men would not joined .</p>