TSD - 4

Career Launcher

QA - 10

CEX-Q-0211/18

Contents

- Boats & Stream
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Number of Questions : 30

Boats & Stream

1. A boat sails m km upstream at the rate of r km/hr. If the stream flows at the rate of s km/hr, then how long will the boat take for the return trip?

(1) $\frac{m}{r+2s}$ hr (2) $\frac{r+2s}{m}$ hr

(3) $\frac{m}{r+s}$ hr (4) None of these

2. A boat goes from point A to B in upstream and returns to A through the same path. If time of journey from A to B is twice that of from B to A, then the ratio of speed of the boat in still water to the speed of the current is:

(1) 3 : 1
(2) 1 : 3
(3) 2 : 1
(4) Cannot be determined

3. A and B are stationed at two points Q and R respectively on a flowing river. The direction of flow of river is from Q to R. When A and B swim towards each other, they meet at P, which is at a distance of 20 m from the point R. When A swims towards B and B swims away from A, they meet at S, which is at a distance of 40 m from the point R. B's speed in still water is five times the speed at which the river flows. Find the ratio of speeds of A and B in still water.

(1) 6 : 1 (2) 7 : 1
(3) 8 : 1 (4) 9 : 1

4. Two boats start towards each other at different speeds from the parallel and opposite banks of a lake. When they pass each other for the first time, they are 300 m from one of the banks. After the first meeting, they continue to move towards the opposite banks. Once they reach the opposite banks, they turn around and move towards each other once again. When they pass each other the second time, they are 200 m from the other bank. Find the ratio of the speeds of the two boats. (Assume both the boats travel at uniform speed and neglect values of turnaround time.)

(1) 2 : 1 (2) 4 : 3
(3) 7 : 3 (4) 5 : 4

5. A swimmer jumps from a bridge over a canal and swims 1 km upstream. After that first kilometer, he passes a floating cork. He continues swimming for another half an hour and then turns around and swims back to the bridge in 30 mins. The swimmer and the cork arrive at the bridge at the same time. The swimmer has been swimming with constant speed. How fast does the water in the canal flow?

(1) 0.5 km/hr (2) 2 km/hr
(3) 3.5 km/hr (4) 1 km/hr

6. At his usual rowing rate, Rahul can travel 12 miles downstream in a certain river in 6 hr less than it takes him to travel the same distance upstream. But if he could double his usual rowing rate for this 24 miles round trip, the downstream 12 miles would then take only 1 hr less than the upstream 12 miles. What is the speed of the current in miles per hour?

[CAT 2001]

(1) $\frac{7}{3}$ (2) $\frac{4}{3}$ (3) $\frac{5}{3}$ (4) $\frac{8}{3}$

7. Two boats start towards each other, from the two points exactly opposite of each other on the opposite banks of a river, simultaneously. They meet at a distance of 410 m from one of the banks and continue sailing further till they reach the opposite banks. They take rest for 1 hr each and start off the return journey taking the same route. Now they meet at a distance of 230 m from the other bank. Find the distance between the two banks. (Assume that river water is still.)

(1) 750 m (2) 840 m
(3) 1100 m (4) 1000 m

Directions for questions 8 and 9: Answer the following questions based on the information given below:

Cities A and B are in different time zones. A is located 3000 km east of B. The table below describes the schedule of an airline operating non-stop flights between A and B. All the times indicated are local and on the same day.

Departure		Arrival	
City	Time	City	Time
B	8:00 am	A	3:00 pm
A	4:00 pm	B	8:00 pm

Assume that planes cruise at the same speed in both directions. However, the effective speed is influenced by a steady wind blowing from east to west at 50 km per hour.

8. What is the time difference between A and B?

(1) 1 hour and 30 minutes
(2) 2 hours
(3) 2 hours and 30 minutes
(4) 1 hour

9. What is the plane's cruising speed in km per hour?

10. Two friends Aku and Chika are stationed at two different points P and Q respectively along the same bank of a straight stretch of a flowing river. The ratio of the speeds of Aku and Chika in still water is 1 : 3. When Aku and Chika swim in the opposite directions from P and Q respectively, they meet at a point 30 meters from Q. If the time taken by Aku to reach point Q and Chika to reach point P from their original positions P and Q respectively is the same, then the distance (in meters) between P and Q is

(1) 45 (2) 90
(3) 120 (4) 60

Time and Work

11. Eight children and twelve men complete a certain piece of work in 9 days. If each child is half as efficient as a man, then in how many days will 12 men finish the same work?

12. A and B together can complete a piece of work in 12 days. A and C together can complete the work in 20 days. If three of them together can complete the work in 8 days, then in how many days can A alone complete the work?

(1) 24 (2) $13\frac{1}{3}$
(3) 120 (4) 60

13. Each of Atul, Yogesh and Riyaz can complete a piece of work in 12 days, 36 days and 54 days respectively. They started the work together, but Atul left after working for 6 days and Yogesh left 8 days before the completion of the work. In how many days was the work completed?

(1) 16 (2) 17
(3) 20 (4) $15\frac{3}{5}$

14. A, B and C can complete a piece of work in 8, 12 and 24 days respectively. If A and B work on the first day, B and C work on the second day and A and C work on the third day and the same pattern continues 4th day onward, then in how many days will the work be completed?

15. A can complete a piece of work in 30 days and B can complete the same work in 20 days. If A and B started working together and A quit 5 days before the completion of the work, then for how long they worked together?
(1) 8 days (2) 12 days
(3) 9 days (4) 5 days

16. If 15 men or 24 women or 36 boys can complete a piece of work in 12 days by working 8 hours a day, then how many men must be required to work with 12 women and 6 boys to complete another piece of work which is $2\frac{1}{4}$ times the previous work in 30 days by working 6 hours a day?

17. Taps A and B can fill a tank in 12 min and 15 min respectively. If both are opened and A is closed after 3 min, how long will it take for B to fill the tank there after?
(1) 7 min 45 s (2) 7 min 15 s
(3) 8 min 5 s (4) 8 min 15 s

18. If two pipes are opened simultaneously, the reservoir will be filled in 6 hr. One pipe fills the reservoir 5 hr faster than the other. How much time does the slower pipe take to fill in the reservoir?
(1) 15 hr (2) 2 hr
(3) 10 hr (4) Both (1) and (2)

19. Because of a leak, a tank which usually is filled in 3 hr, now takes 3.5 hr to be filled. The leak alone will empty the filled tank in
(1) 18 hr (2) 21 hr
(3) 15 hr (4) 16 hr

20. A tap can fill an empty tank completely in 10 hr while another tap can empty the full tank in 20 hr. If both the taps are kept open, then in what time would an empty tank gets completely filled?
(1) 15 hr (2) 20 hr
(3) 10 hr (4) 40 hr

21. Two cigarette smokers A and B take puffs on the same cigarette alternately starting with A. A takes a puff for 2 s and then B takes a puff for 3 s. Rate of burning while taking a puff is 3 mm/s and while not puffing is 1 mm/s. After how much time will the cigarette be completely burnt, if its length is 84 mm and the the gap between any two consecutive puffs is 3s?
(1) 40 sec (2) 35 sec
(3) 44 sec (4) 36 sec

22. Two inlet pipes can seperately fill a tank in 20 minutes and 15 minutes respectively and a waste pipe can empty the completely filled tank in 12 minutes. On a certain day, the two inlet pipes are turned on simultaneously to fill the empty tank. But after 9 minutes it was found that the waste pipe was also left opened, it was closed immediately. How much more time is required to fill the tank completely?
(1) 5.5 min (2) 5 min
(3) 6 min (4) 6.2 min

23. An iron water tank with a capacity of 10,000 gallons has a water supply inlet, which feeds water at the rate of 300 gallons per hour. This water inlet starts automatically when the water level goes below the 5000-gallon mark. If there is a hole formed at the bottom of the tank when the water tank is full, how long will it take for the whole tank to be emptied if the water goes out of the hole at the rate of 500 gallons per hour?
(1) 20 hr (2) 10 hr
(3) 50 hr (4) 35 hr

24. It takes six technicians a total of 10 hr to build a new server from Direct Computer, with each working at the same rate. If six technicians start to build the server at 11 am, and one technician per hour is added beginning at 5 pm, at what time will the server be completed?
(1) 6.40 pm (2) 7 pm
(3) 7.20 pm (4) 8 pm

25. A chemical plant has four tanks (A, B, C and D), each containing 1000 litres of a chemical. The chemical is being pumped from one tank to another from (i) to (vi) in order as follows:
(i) From A to B @ 20 litres/minute
(ii) From C to A @ 90 litres/minute
(iii) From A to D @ 10 litres/minute
(iv) From C to D @ 50 litres/minute
(v) From B to C @ 100 litres/minute
(vi) From D to B @ 110 litres/minute

Which tank gets emptied first, and how long does it take (in minutes) to get empty after pumping starts?
(1) A, 16.66 (2) C, 20
(3) D, 20 (4) D, 25

26. Sharat, Chandra and Mayank completed a job in 10 days in the following manner:-
They worked together for 3 days in which they completed 37% of the total work. But due to unavoidable circumstances, Sharat quits the job at this point and Chandra and Mayank continued to work together to complete the job. If the work done by Chandra in 4 days is equal to the work done by Mayank in 5 days, then what is the time required by the fastest worker amongst the three mentioned persons to complete the whole work alone?
(1) 20 days (2) 25 days
(3) 30 days (4) 15 days

27. Each of A, B and C, working alone, can complete a piece of work in 10 days, 20 days and 30 days respectively. They work in such a manner that on 1st day A and B work, on 2nd day B and C work and on 3rd day C and A work. If work is continued in the same sequence, then on which day the work will be completed and who will complete it?
(1) 8th, B and C (2) 9th, B and C
(3) 9th, C and A (4) 7th, A and B

28. In a tank there are four outlets A, B, C and D. These outlets can empty the tank in 10 minutes, 12 minutes, 15 minutes and 18 minutes respectively. If the tank is full and all the outlets are opened how much time will it take to empty the whole tank, if the outlets A and B are closed after 1 minute and 2 minutes respectively, and outlet C is closed 5 minutes before the tank gets empty.

(1) $8\frac{8}{11}$ minutes (2) $4\frac{8}{13}$ minutes

(3) 7 minutes (4) $6\frac{8}{11}$ minutes

29. In a factory's total daily wages of 20 men, 30 women and 36 children is Rs. 78. The ratio of work done by a man, a woman and a child in a day is 3 : 2 : 1 respectively. What will be the total wages of 15 men, 21 women and 30 children for 18 weeks?
(1) Rs. 7,371 (2) Rs. 9,585
(3) Rs. 6,956 (4) Rs. 5,000

30. A tank can be filled in by an inlet pipe of circular cross section in 10 min. Another tank twice as big is filled in by 3 inlet pipes whose diameters are in the ratio 1 : 2 : 3 . If the smallest pipe of these is four times as much in cross section as the pipe of the first tank, find the time taken to fill the second tank. [Speed of inflow of water in the second tank is half the speed of inflow of the water in the first tank.]

(1) $\frac{7}{5}$ min (2) $\frac{5}{7}$ min

(3) $\frac{5}{6}$ min (4) $\frac{6}{5}$ min

QA - 10 : TSD - 4
Answers and Explanations

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1	1	**2**	1	**3**	2	**4**	2	**5**	4	**6**	4	**7**	4	**8**	4	**9**	–	**10**	4
11	–	**12**	3	**13**	4	**14**	–	**15**	3	**16**	–	**17**	4	**18**	1	**19**	2	**20**	2
21	3	**22**	3	**23**	4	**24**	4	**25**	3	**26**	1	**27**	3	**28**	1	**29**	1	**30**	2

1. 1 Let the speed of boat x km/hr. Then
$r = x - s \Rightarrow x = r + s$.

Time taken for return trip = $\frac{m}{s+x} = \frac{m}{r+2s}$ hr.

2. 1 Let 'b' and 'c' be the speed of boat in still water and current respectively.
Time taken in upstream = 2 × Time taken in downstream

$\Rightarrow \frac{AB}{b-c} = 2 \times \frac{AB}{b+c}$

$\Rightarrow 2b - 2c = b + c$

$\Rightarrow b = 3c$

The required ratio is 3 : 1.

3. 2 Let the distance between point Q and point P be 'x' m. Let the speed of A, B and the river be a, b and r respectively.

Therefore, $\frac{x}{(a+r)} = \frac{20}{(b-r)}$ … (i)

Also, $\frac{(x+60)}{(a+r)} = \frac{40}{(b+r)}$ … (ii)

Dividing equation (i) by (ii) we get:

$\frac{2x}{(x+60)} = \frac{(b+r)}{(b-r)}$ … (iii)

Given that b = 5r

Therefore, $\frac{2x}{(x+60)} = 1.5 \Rightarrow x = 180$ m

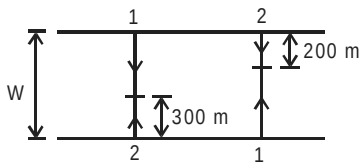
Distance between points Q and R = 180 + 20 = 200 m.

Putting value of x = 180 in (i) we get: $\frac{(a+r)}{(b-r)} = 9$.

$\Rightarrow \frac{a+r}{4r} = 9 \Rightarrow a = 35r = 7b$

Ratio of speed of A and B = 7 : 1.

4. 2



Let W be the width of the lake in meter and S1, S2 are speeds of the boats
When, they meet for the first time, we get

$\frac{300}{S_2} = \frac{(W-300)}{S_1}$ … (i)

Also, $\frac{(W-300+200)}{S_2} = \frac{(W-200+300)}{S_1}$

$\Rightarrow (W - 100)S_1 = (W + 100)S_2$

$\Rightarrow 100 (S_1 + S_2) = W(S_1 - S_2)$ …(ii)

From (i), $300 (S_1 + S_2) = W S_2$

or, $S_1 + S_2 = \frac{W S_2}{300}$

In (ii) $W(S_1 - S_2) = \frac{100 S_2 W}{300}$

$\Rightarrow 300 S_1 - 300 S_2 = 100 S_2$

$\Rightarrow 300 S_1 = 400 S_2$

$\Rightarrow \frac{S_1}{S_2} = \frac{400}{300} = \frac{4}{3}$.

5. 4 It is obvious that the cork is carried away by the flow of the water (i.e. it has the same speed as the water). So if the swimmer is swimming away from the cork for half an hour (upstream), it will take him another half hour to swim back to the cork again (downstream, where he reaches the cork at the moment it is passing below the bridge). So in that 1 hr time, the cork has moved 1 km towards to the bridge.
The water in the canal flows at a speed of 1 km/hr.

6. 4 Let x be rate of rowing by Rahul, and y be the rate of current in mph.

$$\frac{12}{x-y}-\frac{12}{x+y}=6\Rightarrow\frac{y}{x^2-y^2}=\frac{1}{4}$$

$$\Rightarrow y=\frac{x^2-y^2}{4} \quad \text{... (i)}$$

When Rahul doubles his rowing rate, then we have

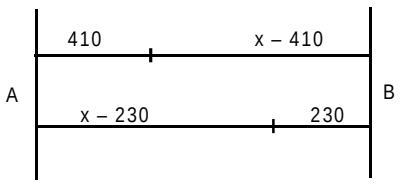
$$\frac{12}{2x-y}-\frac{12}{2x+y}=1\Rightarrow\frac{2y}{4x^2-y^2}=\frac{1}{12}$$

$$\Rightarrow y=\frac{4x^2-y^2}{24} \quad \text{... (ii)}$$

Hence, from (i) and (ii), we have $2x^2 = 5y^2$

Putting $x^2 = \frac{5}{2}y^2$ in (i), we get $y=\frac{\frac{3}{2}y^2}{4}\Rightarrow y=\frac{8}{3}$.

7. 4



If x is the width of the river then speed at which they travel is proportional to the distances they travel. Hence from the diagram, we get

$$\frac{410}{x-410}=\frac{x-410+230}{410+x-230}$$

Solving the quadratic equation, we get x = 1000 m.

For questions 8 and 9:
Let the cruising speed of the plane and the time difference between A and B be y km/hr and x hours respectively.
Distance between A and B = 3000 kilometers. For, the plane moving from city A to City B: 3000 = (7 – x) × (y – 50). This is satisfied for x = 1 and y = 550. These are the only values given in the options that satisfy the above equation.

8. 4 The required difference = 1 hour.

9. Plane's cruising speed = 550 km/hr.

10. 4 Let the speeds of Aku and Chika be y m/s and 3y m/s respectively and the speed at which the river flows be 'x' m/s. As per the question, the possible set of equations are:

$$\frac{(PQ-30)}{y+x}=\frac{30}{(3y-x)} \quad \text{...(i)}$$

$$\frac{PQ}{y+x}=\frac{PQ}{3y-x} \quad \text{...(ii)}$$

[If we assume flow of the river is from Q to P, then 3y + x = y – x, which is impossible.]
From (ii)
3y – x = y + x ⇒ y = x
Substituting in equation (i), we get

$$\frac{(PQ-30)}{2x}=\frac{30}{2x}\Rightarrow PQ = 60 \text{ meters.}$$

11. 8 children and 12 men = 4 + 12 i.e. 16 men
(∵ 1 man = 2 children).

∴ 12 men will take $\frac{9\times16}{12}$ = 12 days.

12. 3 $$\frac{1}{A}+\frac{1}{B}=\frac{1}{12} \quad \text{...(i)}$$

$$\frac{1}{A}+\frac{1}{C}=\frac{1}{20} \quad \text{...(ii)}$$

$$\frac{1}{A}+\frac{1}{B}+\frac{1}{C}=\frac{1}{8} \quad \text{...(iii)}$$

Adding (i) and (ii), we get

$$\frac{2}{A}+\frac{1}{B}+\frac{1}{C}=\frac{8}{60} \quad \text{...(iv)}$$

Subtracting (iii) from (iv), we get

$$\frac{1}{A}=\frac{8}{60}-\frac{1}{8}=\frac{1}{120}$$

Hence, A alone can complete the whole work in 120 days.

13. 4 Let us assume that the work can be completed in n days. Thus,

$$\frac{6}{12}+\frac{n-8}{36}+\frac{n}{54}=1$$

$$\Rightarrow\frac{n-8}{36}+\frac{n}{54}=\frac{1}{2}$$

$$\Rightarrow\frac{3n-24+2n}{108}=\frac{1}{2}$$

$$\Rightarrow 5n = 54 + 24 = 78 \Rightarrow n = 15\frac{3}{5}.$$

14. Work done on the first day = $\frac{1}{8}+\frac{1}{12}=\frac{5}{24}$

Work done on the second day = $\frac{1}{12}+\frac{1}{24}=\frac{3}{24}$

Work done on the third day = $\frac{1}{8}+\frac{1}{24}=\frac{4}{24}$

Work done on the first three days

$= \frac{5}{24}+\frac{3}{24}+\frac{4}{24}=\frac{12}{24}=\frac{1}{2}$

Thus, the work will be completed in 6 days.

15. 3 Let the required number of days be x.

$\therefore x\left(\frac{1}{20}+\frac{1}{30}\right)+\frac{5}{20}=1$

$\Rightarrow$ x = 9.

16. Let units of work done in an hour by a man, a woman and a boy be m, w and b respectively.
15m = 24w = 36b
$\Rightarrow$ 12w = 7.5m and 6b = 2.5 m
Let the number of men required be x.
2.25 (15m × 12 × 8) = (xm + 12w + 6b) × 30 × 6
$\Rightarrow$ 18m = (xm + 7.5m + 2.5m)
$\Rightarrow$ x = 8.

17. 4 In a minute, (A + B) fill $\frac{1}{12}+\frac{1}{15}=\frac{9}{60}$

In 3 min, they fill $3\times\frac{9}{60}=\frac{27}{60}$ parts of the tank.

Remaining part = $1-\frac{27}{60}=\frac{33}{60}$

So B will take $\frac{33}{60}\times 15 = 8\text{ min }15\text{ s}$

18. 1 Let the slower pipe takes x hr to fill the reservoir.

$\frac{1}{x}+\frac{1}{x-5}=\frac{1}{6}$

$\Rightarrow x^2 - 5x = 12x - 30$
$\Rightarrow x^2 - 17x + 30 = 0$
$\Rightarrow (x - 15)(x - 2) = 0$
$\Rightarrow$ x = 15hr $[\because x \neq 2]$

19. 2 Let the required time be x hours.

$\frac{1}{3}-\frac{1}{x}=\frac{1}{3.5}\Rightarrow x = 21.$

20. 2 Let x hr be the required time to fill the tank.

$\therefore$ Given $\left(\frac{1}{10}-\frac{1}{20}\right)x = 1$

$\Rightarrow \frac{x}{20}$ = 1 ro x = 20

$\therefore$ The tank can be filled completely in 20 hr.

21. 3 As A starts puffing, the length of the cigarette that gets burnt in one cycle $\left(A\xrightarrow[\text{gap}]{}B\xrightarrow[\text{gap}]{}\right)$

= (2 × 3) + 3 + (3 × 3) + 3 = 6 + 3 + 9 + 3 = 21 mm.
84 mm will get burnt in four such cycles.

$\left(\because \frac{84}{21}=4\right)$,

Time taken in one cycle = 2 + 3 + 3 + 3 = 11s.
So, total time = 4 × 11 = 44s.

22. 3 Let total work be 60 units. 1st tap fills 3units per minute, 2nd tap fills 4 units per minute and waste pipe empties 5 units per minute. So, when opened together all three will fill (3 + 4 – 5) = 2 units per min. Hence in first 9 min, 18 units of tank is filled. Since the waste pipe is closed
$\therefore$ The remaining 42 units will require

$\frac{42}{3+4}$ = 6 min to fill.

23. 4 The water supply does not start until the water level reaches the 5,000-gallon mark, which will take 10 hr $\left(\frac{5000}{500}\right)$. Once the level reaches that mark, there is an inflow at the rate of 300 gallons per hour and an outflow at the rate of 500 gallons per hour. So effective emptying rate will be 200 gallons per hour. At this rate, the tank will be emptied in another 25 hr. So the total time taken to empty the tank is 35 hr.

24. 4 Total amount of work = 60 man-hours
From 11 am to 5 pm, 6 technicians = 36 man-hours
From 5 pm to 6 pm, 7 technicians = 7 man-hours
From 6 pm to 7 pm, 8 technicians = 8 man-hours
From 7 am to 8 pm, 9 technicians = 9 man-hours
Total = 60 man-hours

25. 3 Following is the situation as steps (i) to (vi) are followed (according to question statement):

A	B	C	D
–20	20		
90		–90	
–10			10
		–50	50
	–100	100	
	110		–110
Total + 60	30	–40	–50

D gets emptied first, it gets emptied in 20 minutes.
Hence option (3).

26. 1 Chandra and Mayank complete 63% work in 7 days. So, they complete 9% work in a day.
Now, since the ratio of their efficiency Chandra and Mayank is 5 : 4, so one of them completes 5% work a day, and other one 4% a day. Obviously, the person doing 5% work a day is the fastest worker.
Time taken by the fastest worker = 20 days.

27. 3 On 1st day part of work completed = $\frac{1}{10}+\frac{1}{20}=\frac{3}{20}$

On 2nd day part of work completed = $\frac{1}{20}+\frac{1}{30}=\frac{1}{12}$

On 3rd day part of work completed = $\frac{1}{30}+\frac{1}{10}=\frac{2}{15}$

In three days part of work completed

$= \frac{3}{20}+\frac{1}{12}+\frac{2}{15}=\frac{11}{30}$

In 6 days part of work completed = $\frac{22}{30}$

Remaining work = $1-\frac{22}{30}=\frac{8}{30}$

On 7th day, part of work remained

$= \frac{8}{30}-\frac{3}{20}=\frac{16}{60}-\frac{9}{60}=\frac{7}{60}$

On 8th day, part of work remained

$= \frac{7}{60}-\frac{1}{12}=\frac{7}{60}-\frac{5}{60}=\frac{2}{60}=\frac{1}{30}$

$\because \frac{2}{15}>\frac{1}{30}$

$\therefore$ The work will be completed on 9th day by C and A.

28. 1 Let the capacity of the tank be 180 units. (LCM of 10, 12, 15 and 18)
Amount of water drawn in one minute by
Outlet Pipe A = 18 Units
Outlet Pipe B = 15 Unts
Outlet Pipe C = 12 Unts
Outlet Pipe D = 10 Unts
Let the total time taken to empty the tank with the given conditions be 't' minutes.
Amount drawn by A = 1 × 18 = 18 units
Amount drawn by B = 2 × 15 = 30 units
Amount drawn by C = (t–5) × 12 = (12t – 60) units
Amount drawn by D = t × 10 = 10t units
$\Rightarrow$ 18 + 30 + 12t – 60 + 10t = 180

22t = 192 or t = $\frac{96}{11}$ minutes = $8\frac{8}{11}$ minutes

29. 1 Let the work done by a man, a woman and a child in a day be m, w and c respectively.
Then, m = 3c and w = 2c
$\therefore$ 20m + 30w + 36c = 60c + 60c + 36c = 156c
Total units of work done in second case
= (15m + 21w + 30c) × 7 × 18
= (45c + 42c + 30c) × 7 × 18 = 117c × 7 × 18
Hence, the required total ways

$= \frac{78}{156c} \times 117c \times 7 \times 18$ = Rs. 7,371.

30. 2 If the ratio of diameters of 3 inlet pipes of second tank is 1 : 2 : 3, the ratio of their cross-sectional areas will be 1 : 4 : 9. Suppose cross-sectional area of inlet pipe of first tank be k. Then the cross-sectional areas of three pipes of second tank will be 4k, 16k and 36k respectively. Total cross-sectional area of pipes of second tank is 56k.
Time taken in filling the second tank is

$= 10\times\frac{k}{56k}\times 2\times 2 = \frac{5}{7}$ min