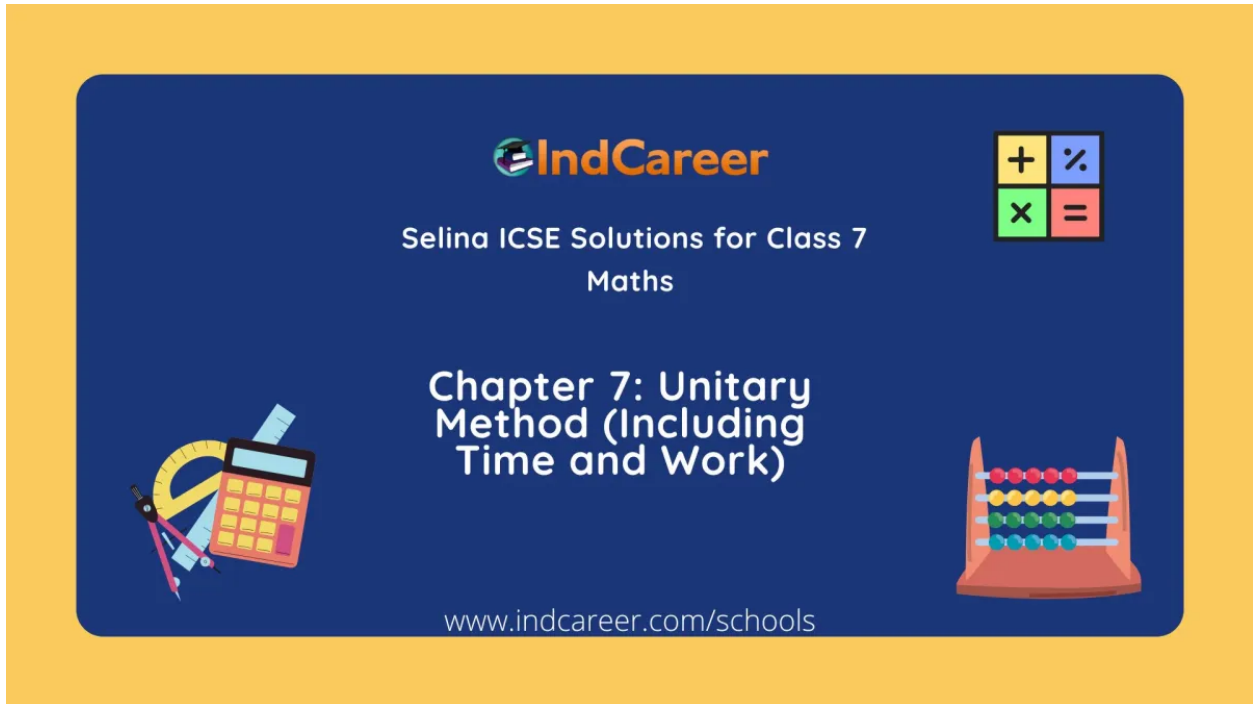


Selina Class 7 ICSE Solutions Mathematics : Chapter 7- Unitary Method (Including Time and Work)



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Chapter 7- Unitary Method (Including Time and Work)

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Selina Class 7 ICSE Solutions Mathematics : Chapter 7- Unitary Method (Including Time and Work)

Selina 7th Maths Chapter 7, Class 7 Maths Chapter 7 solutions

Exercise 7A page: 88

1. Weight of 8 identical articles is 4.8 kg. What is the weight of 11 such articles?

Solution:

It is given that

Weight of 8 identical articles = 4.8 kg

So the weight of 1 article = $4.8/8$ kg

Here the weight of 11 such articles = $4.8/8 \times 11$

We get

= 0.6×11

= 6.6 kg

2. 6 books weigh 1.260 kg. How many books will weigh 3.150 kg?

Solution:

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It is given that

Weight of 6 books = 1.260 kg or 1 kg 260 g

Number of books = 6

So the number of books in 1 kg = $6 / 1.260$

Number of books in 3.150 kg = $(6 \times 3.150) / 1.260$

Multiplying 1000 to numerator and denominator

$$= (6 \times 3150) / 1260$$

$$= 3150 / 210$$

$$= 15 \text{ books}$$

3. 8 men complete a work in 6 hours. In how many hours will 12 men complete the same work?

Solution:

It is given that

Time taken by 8 men to complete a work = 6 hours

So the time taken by 1 man to complete the work = 6×8 hours

Time taken by 12 men to complete the work = $(6 \times 8) / 12 = 4$ hours

4. If a 25 cm long candle burns for 45 minutes, how long will another candle of the same material and same thickness but 5 cm longer than the previous one burn?

Solution:

Time taken by a 25 cm long candle to burn = 45 minutes

Time taken by a 1 cm long candle to burn = $45 / 25$ minutes

So the time taken by a $25 + 5 = 30$ cm long candle to burn = $(45 \times 30) / 25 = 54$ minutes

5. A typist takes 80 minutes to type 24 pages. How long will he take to type 87 pages?

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Solution:

Time taken by a typist to type 24 pages = 80 minutes

Time taken by a typist to type 1 page = $80/24$ minutes

Time taken by a typist to type 87 pages = $(80 \times 87)/24 = 290$ minutes

6. ₹750 support a person for 15 days. For how many days will ₹ 2,500 support the same person?

Solution:

It is given that

₹ 750 can support a family for 15 days

So ₹ 1 will support a family = $15/750$ days

Similarly ₹ 2500 will support a family = $15/750 \times 2500 = 50$ days

7. 400 men have provisions for 23 weeks. They are joined by 60 men. How long will the provisions last?

Solution:

It is given that

No. of weeks 400 men have provisions = 23 weeks

No. of weeks 1 man have provisions = 23×400 weeks

So the no. of weeks $400 + 60 = 460$ men have provisions = $(23 \times 400)/460 = 20$ weeks

8. 200 men have provisions for 30 days. If 50 men have left, for how many days the same provisions would last for the remaining men?

Solution:

No. of days 200 men have provisions = 30 days

No. of days 1 man have provisions = 30×200 days

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So the no. of days $200 - 50 = 150$ men have provisions $= (30 \times 200) / 150 = 40$ days

9. 8 men can finish a certain amount of provisions in 40 days. If 2 more men join them, find for how many days will the same amount of provisions be sufficient.

Solution:

No. of days 8 men can finish a certain amount of provision = 40 days

No. of days 1 man can finish provision = 40×8 days

So the no. of days $8 + 2 = 10$ men finish a provision $= (40 \times 8) / 10 = 32$ days

10. If the interest on ₹ 200 be ₹ 25 in a certain time, what will be the interest on ₹ 750 for the same time?

Solution:

It is given that

Interest on ₹ 200 = ₹ 25

Interest on ₹ 1 = ₹ $25/200$

So the interest on ₹ 750 $= (25 \times 750) / 200 = 750/8 = ₹ 93.75$

11. If 3 dozen eggs cost ₹ 90, find the cost of 3 scores of eggs. [1 score = 20]

Solution:

We know that

3 dozen $= 3 \times 12 = 36$ eggs

3 scores $= 3 \times 20 = 60$

Cost of 36 eggs = ₹ 90

Cost of 1 egg = ₹ $90/36$

Cost of 60 eggs $= (90 \times 60) / 36 = ₹ 150$

12. If the fare for 48 km is ₹ 288, what will be the fare for 36 km?

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Solution:

It is given that

Fare for 48 km = ₹ 288

So the fare for 1 km = $(288 \times 36) / 48 = ₹ 216$

13. What will be the cost of 3.20 kg of an item, if 3 kg of it costs ₹ 360?

Solution:

It is given that

Cost of 3 kg of an item = ₹ 360

Cost of 1 kg of an item = ₹ 360/3

So the cost of 3.20 kg of an item = $(360 \times 3.20) / 3 = ₹ 384$

14. If 9 lines of a print, in a column of a book, contain 36 words, how many words will a column of 51 lines contain?

Solution:

No. of words in a 9 lines of a print = 36

No. of word in a 1 line of a print = 36/9

No. of words in 51 lines of a print = $36/9 \times 51 = 204$

15. 125 students have food sufficient for 18 days. If 25 more students join them, how long will the food last now?

What assumption have you made to come to your answer?

Solution:

No. of pupils in the beginning = 125

No. of pupils joined = 25

So the total no. of pupils = $125 + 25 = 150$

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No. of days food is sufficient for 125 pupils = 18 days

No. of days food is sufficient for 1 pupil = 18×125 days

No. of days food is sufficient for 150 pupils = $(18 \times 125) / 150$

We get

$$= (18 \times 5) / 6$$

$$= 15 \text{ days}$$

Exercise 7B page: 90

1. The cost of $\frac{3}{5}$ kg of ghee is ₹ 96, find the cost of:

(i) one kg ghee.

(ii) $\frac{5}{8}$ kg ghee.

Solution:

It is given that

Cost of $\frac{3}{5}$ kg of ghee = ₹ 96

(i) Cost of 1 kg of ghee = $96 \times \frac{5}{3}$ = ₹ 160

(ii) Cost of $\frac{5}{8}$ kg of ghee = $160 \times \frac{5}{8}$ = ₹ 100

2. $3\frac{1}{2}$ m of cloth costs ₹ 168, find the cost of $4\frac{1}{3}$ m of the same cloth.

Solution:

It is given that

Cost of $3\frac{1}{2}$ m of cloth = ₹ 168

So the cost of 1 m of cloth = $168 \times \frac{2}{7}$ = ₹ 48

Similarly the cost of $4\frac{1}{3}$ m of cloth = $48 \times \frac{13}{3}$ = ₹ 208

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3. A wrist-watch loses 10 sec in every 8 hours. In how much time will it lose 15 sec?

Solution:

It is given that

Time taken by a wrist watch to lose 10 sec = 8 hours

So the time taken by a wrist watch to lose 1 sec = $8/10$ hours

Similarly the time taken by a wrist watch to lose 15 sec = $8/10 \times 15 = 12$ hours

4. In 2 days and 20 hours a watch gains 20 sec. Find, how much time the watch will take to gain 35 sec.

Solution:

We know that

2 days 20 hours = $2 \times 24 + 20 = 48 + 20 = 68$ hours

Time in which 20 sec are gained = 68 hours

So the time in which 1 sec will be gained = $68/20$ hours

Similarly the time in which 35 sec will be gained = $68/20 \times 35$

By further calculation

= 119 hours

So we get

= $119 \div 24$ days

= 4 days 23 hours

5. 50 men mow 32 hectares of land in 3 days. How many days will 15 men take to mow it?

Solution:

Land is similar for both the case.

No. of days taken by 50 men to mow the land = 3 days

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No. of days taken by 1 man to mow the land = 3×50 days

No. of days taken by 15 men to mow the land = $(3 \times 50)/15 = 10$ days

6. The wages of 10 workers for six days week are ₹ 1,200. What are the one day wages:

(i) of one worker?

(ii) of 4 workers?

Solution:

It is given that

Wages of 10 workers for 6 days a week = ₹ 1200

Wages of 10 workers per day = $1200/6 = ₹ 200$

Wages of 1 worker per day = $200/10 = ₹ 20$

Wages of 4 workers per day = $4 \times 20 = ₹ 80$

7. If 32 apples weigh 2 kg 800 g, how many apples will there be in a box, containing 35 kg of apples?

Solution:

Weight of apples in a box = 35 kg

If the weight of apples is 2 kg 800 g (2.8 kg) then the number of apples = 32

No. of apples if the weight is 1 kg = $32/2.800$

No. of apples if the weight is 35 kg = $(32 \times 35)/2.800$

Multiplying both numerator and denominator by 1000

= $(32 \times 35 \times 1000)/2800$

= 400

8. A truck uses 20 litres of diesel for 240 km. How many litres will be needed for 1200 km?

Solution:

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Diesel needed for 240 km = 20 litres

Diesel needed for 1 km = $20/240$ litres

Diesel needed for 1200 km = $20/240 \times 1200 = 100$ litres

9. A garrison of 1200 men has provisions for 15 days. How long will the provisions last if the garrison be increased by 600 men?

Solution:

No. of days 1200 men has provisions = 15 days

No. of days 1 man has provisions = 15×1200 days

No. of days $1200 + 600 = 1800$ men has provisions = $(15 \times 1200)/1800 = 10$ days

10. A camp has provisions for 60 pupils for 18 days. In how many days, the same provisions will finish off if the strength of the camp is increased to 72 pupils?

Solution:

No. of days 60 pupil have provisions = 18 days

No. of days 1 pupil have provision = 18×60 days

No. of days 72 pupils have provision = $(18 \times 60)/72 = 15$ days

Exercise 7C page: 92

1. A can do a piece of work in 6 days and B can do it in 8 days. How long will they take to complete it together?

Solution:

It is given that

A can do a piece of work in 6 days

So A's one day work = $1/6$

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B can do the same work in 8 days

So B's one day work = $\frac{1}{8}$

Here A and B one day work = $\frac{1}{6} + \frac{1}{8}$

By taking LCM

$$= \frac{(4 + 3)}{24}$$

$$= \frac{7}{24}$$

Similarly A and B can do the same work = $\frac{24}{7} = 3 \frac{3}{7}$ days

2. A and B working together can do a piece of work in 10 days. B alone can do the same work in 15 days. How long will A alone take to do the same work?

Solution:

It is given that

A and B work together to do a piece of work in 10 days

B alone can do the same work in 15 days

So we get

A and B one day work = $\frac{1}{10}$

B's one day work = $\frac{1}{15}$

A's one day work = $\frac{1}{10} - \frac{1}{15}$

Taking LCM

$$= \frac{(3 - 2)}{30}$$

$$= \frac{1}{30}$$

No. of days A can do the same work = 30 days

3. A can do a piece of work in 4 days and B can do the same work in 5 days. Find, how much work can be done by them working together in:

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(i) one day

(ii) 2 days.

What part of work will be left, after they have worked together for 2 days?

Solution:

It is given that

A can do a piece of work in 4 days

B can do the same work in 5 days

A's one day work = $\frac{1}{4}$

B's one day work = $\frac{1}{5}$

(i) A and B both one day work = $\frac{1}{4} + \frac{1}{5}$

Taking LCM

$$= (5 + 4) / 20$$

$$= 9 / 20$$

(ii) A and B two days' work = $9/20 \times 2 = 9/10$

So the work left after 2 days = $1 - 9/10$

Taking LCM

$$= (10 - 9) / 10$$

$$= 1/10$$

4. A and B take 6 hours and 9 hours respectively to complete a work. A works for 1 hour and then B works for two hours.

(i) How much work is done in these 3 hours?

(ii) How much work is still left?

Solution:

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It is given that

A takes 6 hours to finish the work

B takes 9 hours to finish the work

A's 1 hour work = $\frac{1}{6}$

B's 1 hour work = $\frac{1}{9}$

B's 2 hour work = $\frac{1}{9} \times 2 = \frac{2}{9}$

(i) A's 1 hour work + B's 2 hours' work = $\frac{1}{6} + \frac{2}{9}$

By taking LCM

$$= \frac{(3 + 4)}{18}$$

$$= \frac{7}{18}$$

(ii) The work still left = $1 - \frac{7}{18}$

Taking LCM

$$= \frac{(18 - 7)}{18}$$

$$= \frac{11}{18}$$

5. A, B and C can do a piece of work in 12, 15 and 20 days respectively. How long will they take to do it working together?

Solution:

A can do a piece of work in 12 days

B can do a piece of work in 15 days

C can do a piece of work in 20 days

A's one day work = $\frac{1}{12}$

B's one day work = $\frac{1}{15}$

C's one day work = $\frac{1}{20}$

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So A, B and C's together one day work = $\frac{1}{12} + \frac{1}{15} + \frac{1}{20}$

Taking LCM

$$= (5 + 4 + 3) / 60$$

$$= 12/60$$

$$= 1/5$$

Hence, they can do the work in 5 days.

6. Two taps can fill a cistern in 10 hours and 8 hours respectively. A third tap can empty it in 15 hours. How long will it take to fill the empty cistern, if all of them are opened together?

Solution:

It is given that

First tap can fill a cistern in 10 hours

Second tap can fill a cistern in 8 hours

Third tap can empty the cistern in 15 hours

First tap's one hour work = $\frac{1}{10}$

Second tap's one hour work = $\frac{1}{8}$

Third tap's one hour work = $\frac{1}{15}$

Here if all the taps are opened together then their one hour work = $\frac{1}{10} + \frac{1}{8} - \frac{1}{15}$

Taking LCM

$$= (12 + 15 - 8) / 120$$

So we get

$$= (27 - 8) / 120$$

$$= 19/120$$

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All the taps can fill the cistern in = $120/19$ hours = $6 \frac{6}{19}$ hours

7. Mohit can complete a work in 50 days, whereas Anuj can complete the same work in 40 days.

Find:

- (i) work done by Mohit in 20 days.**
- (ii) work left after Mohit has worked on it for 20 days.**
- (iii) time taken by Anuj to complete the remaining work.**

Solution:

It is given that

Mohit can complete a work in 50 days

Anuj can complete the same work in 40 days

Mohit's one day work = $1/50$

Anuj's one day work = $1/40$

(i) Work done by Mohit in 20 days = $1/50 \times 20 = 2/5$

(ii) Work left after Mohit has worked on it for 20 days = $1 - 2/5 = (5 - 2)/5 = 3/5$

(iii) Time taken by Anuj to complete the remaining work = $40 \times 3/5$ days = 24 days

8. Joseph and Peter can complete a work in 20 hours and 25 hours respectively.

Find:

- (i) work done by both together in 4 hrs.**
- (ii) work left after both worked together for 4 hrs.**
- (iii) time taken by Peter to complete the remaining work.**

Solution:

Time taken by Joseph to complete a work = 20 hours

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Time taken by Peter to complete a work = 25 hours

Joseph's one hour work = $1/20$

Peter's one hour work = $1/25$

So both Joseph' and Peter's work in one hour = $1/20 + 1/25$

Taking LCM

$$= (5 + 4)/ 100$$

$$= 9/100$$

(i) Work done by both together in 4 hrs = $9/100 \times 4 = 9/25$

(ii) Work left after both worked together for 4 hrs = $1 - 9/25$

Taking LCM

$$= (25 - 9)/ 25$$

$$= 16/25$$

(iii) Time taken by Peter to complete the remaining work = $25 \times 16/25 = 16$ hours

9. A is able to complete $1/3$ of a certain work in 10 hrs and B is able to complete $2/5$ of the same work in 12 hrs.

Find:

(i) how much work can A do in 1 hour?

(ii) how much work can B do in 1 hour?

(iii) in how much time will the work be completed, if both work together?

Solution:

It is given that

A can complete $1/3$ of a certain work in 10 hours

Time in which A can do full work = $(10 \times 3)/ 1 = 30$ hours

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B can complete $\frac{2}{5}$ of a certain work in 12 hours

Time in which B can do full work = $(12 \times 5) / 2 = 30$ hours

(i) Work done by A in 1 hour = $\frac{1}{30}$

(ii) Work done by B in 1 hour = $\frac{1}{30}$

(iii) Work done by both in 1 hour = $\frac{1}{30} + \frac{1}{30} = \frac{2}{30} = \frac{1}{15}$

Hence, both can finish the work in 15 hours.

10. Shaheed can prepare one wooden chair in 3 days and Shaif can prepare the same chair in 4 days. If they work together, in how many days will they prepare:

(i) one chair?

(ii) 14 chairs of the same kind?

Solution:

Work done by Shaheed in one day = $\frac{1}{3}$

Work done by Shaif in one day = $\frac{1}{4}$

So the work done by both in 1 day = $\frac{1}{3} + \frac{1}{4}$

By taking LCM

$$= (4 + 3) / 12$$

$$= 7/12$$

So both can prepare the chair in $12/7 = 1 \frac{5}{7}$ days

We know that

One chair can be prepared in $1 \frac{5}{7}$ days

So 14 chairs can be prepared in = $12/7 \times 14 = 24$ days

11. A, B and C together finish a work in 4 days. If A alone can finish the same work in 8 days and B in 12 days, find how long will C take to finish the work.

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Solution:

It is given that

A, B and C together finish the work in 4 days

Work done by A, B and C together in 1 day = $\frac{1}{4}$

A's one day work = $\frac{1}{8}$

B's one day work = $\frac{1}{12}$

C's one day work = $\frac{1}{4} - (\frac{1}{8} + \frac{1}{12})$

By taking LCM

$$= (6 - [3 + 2]) / 24$$

$$= \frac{1}{24}$$

Hence, C can finish the work in 24 days.

Exercise 7B

1. The cost of $\frac{3}{5}$ kg of ghee is ₹ 96, find the cost of:

(i) one kg ghee.

(ii) $\frac{5}{8}$ kg ghee.

Solution:

It is given that

Cost of $\frac{3}{5}$ kg of ghee = ₹ 96

(i) Cost of 1 kg of ghee = $96 \times \frac{5}{3} = ₹ 160$

(ii) Cost of $\frac{5}{8}$ kg of ghee = $160 \times \frac{5}{8} = ₹ 100$

2. $3\frac{1}{2}$ m of cloth costs ₹ 168, find the cost of $4\frac{1}{3}$ m of the same cloth.

Solution:

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It is given that

Cost of $3\frac{1}{2}$ m of cloth = ₹ 168

So the cost of 1 m of cloth = $168 \times \frac{2}{7} = ₹ 48$

Similarly the cost of $4\frac{1}{3}$ m of cloth = $48 \times \frac{13}{3} = ₹ 208$

3. A wrist-watch loses 10 sec in every 8 hours. In how much time will it lose 15 sec?

Solution:

It is given that

Time taken by a wrist watch to lose 10 sec = 8 hours

So the time taken by a wrist watch to lose 1 sec = $8/10$ hours

Similarly the time taken by a wrist watch to lose 15 sec = $8/10 \times 15 = 12$ hours

4. In 2 days and 20 hours a watch gains 20 sec. Find, how much time the watch will take to gain 35 sec.

Solution:

We know that

2 days 20 hours = $2 \times 24 + 20 = 48 + 20 = 68$ hours

Time in which 20 sec are gained = 68 hours

So the time in which 1 sec will be gained = $68/20$ hours

Similarly the time in which 35 sec will be gained = $68/20 \times 35$

By further calculation

= 119 hours

So we get

= $119 \div 24$ days

= 4 days 23 hours

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5. 50 men mow 32 hectares of land in 3 days. How many days will 15 men take to mow it?

Solution:

Land is similar for both the case.

No. of days taken by 50 men to mow the land = 3 days

No. of days taken by 1 man to mow the land = 3×50 days

No. of days taken by 15 men to mow the land = $(3 \times 50) / 15 = 10$ days

6. The wages of 10 workers for six days week are ₹ 1,200. What are the one day wages:

(i) of one worker?

(ii) of 4 workers?

Solution:

It is given that

Wages of 10 workers for 6 days a week = ₹ 1200

Wages of 10 workers per day = $1200/6 = ₹ 200$

Wages of 1 worker per day = $200/10 = ₹ 20$

Wages of 4 workers per day = $4 \times 20 = ₹ 80$

7. If 32 apples weigh 2 kg 800 g, how many apples will there be in a box, containing 35 kg of apples?

Solution:

Weight of apples in a box = 35 kg

If the weight of apples is 2 kg 800 g (2.8 kg) then the number of apples = 32

No. of apples if the weight is 1 kg = $32/2.800$

No. of apples if the weight is 35 kg = $(32 \times 35) / 2.800$

Multiplying both numerator and denominator by 1000

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$$= (32 \times 35 \times 1000) / 2800$$

$$= 400$$

8. A truck uses 20 litres of diesel for 240 km. How many litres will be needed for 1200 km?

Solution:

Diesel needed for 240 km = 20 litres

Diesel needed for 1 km = $20 / 240$ litres

Diesel needed for 1200 km = $20 / 240 \times 1200 = 100$ litres

9. A garrison of 1200 men has provisions for 15 days. How long will the provisions last if the garrison be increased by 600 men?

Solution:

No. of days 1200 men has provisions = 15 days

No. of days 1 man has provisions = 15×1200 days

No. of days 1200 + 600 = 1800 men has provisions = $(15 \times 1200) / 1800 = 10$ days

10. A camp has provisions for 60 pupils for 18 days. In how many days, the same provisions will finish off if the strength of the camp is increased to 72 pupils?

Solution:

No. of days 60 pupil have provisions = 18 days

No. of days 1 pupil have provision = 18×60 days

No. of days 72 pupils have provision = $(18 \times 60) / 72 = 15$ days

Exercise 7C

1. A can do a piece of work in 6 days and B can do it in 8 days. How long will they take to complete it together?

Solution:

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It is given that

A can do a piece of work in 6 days

So A's one day work = $\frac{1}{6}$

B can do the same work in 8 days

So B's one day work = $\frac{1}{8}$

Here A and B one day work = $\frac{1}{6} + \frac{1}{8}$

By taking LCM

$$= \frac{(4 + 3)}{24}$$

$$= \frac{7}{24}$$

Similarly A and B can do the same work = $\frac{24}{7} = 3 \frac{3}{7}$ days

2. A and B working together can do a piece of work in 10 days. B alone can do the same work in 15 days. How long will A alone take to do the same work?

Solution:

It is given that

A and B work together to do a piece of work in 10 days

B alone can do the same work in 15 days

So we get

A and B one day work = $\frac{1}{10}$

B's one day work = $\frac{1}{15}$

A's one day work = $\frac{1}{10} - \frac{1}{15}$

Taking LCM

$$= \frac{(3 - 2)}{30}$$

$$= \frac{1}{30}$$

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No. of days A can do the same work = 30 days

3. A can do a piece of work in 4 days and B can do the same work in 5 days. Find, how much work can be done by them working together in:

(i) one day

(ii) 2 days.

What part of work will be left, after they have worked together for 2 days?

Solution:

It is given that

A can do a piece of work in 4 days

B can do the same work in 5 days

A's one day work = $\frac{1}{4}$

B's one day work = $\frac{1}{5}$

(i) A and B both one day work = $\frac{1}{4} + \frac{1}{5}$

Taking LCM

$$= (5 + 4) / 20$$

$$= 9 / 20$$

(ii) A and B two days' work = $9/20 \times 2 = 9/10$

So the work left after 2 days = $1 - 9/10$

Taking LCM

$$= (10 - 9) / 10$$

$$= 1/10$$

4. A and B take 6 hours and 9 hours respectively to complete a work. A works for 1 hour and then B works for two hours.

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(i) How much work is done in these 3 hours?

(ii) How much work is still left?

Solution:

It is given that

A takes 6 hours to finish the work

B takes 9 hours to finish the work

A's 1 hour work = $1/6$

B's 1 hour work = $1/9$

B's 2 hour work = $1/9 \times 2 = 2/9$

(i) A's 1 hour work + B's 2 hours' work = $1/6 + 2/9$

By taking LCM

$$= (3 + 4)/ 18$$

$$= 7/18$$

(ii) The work still left = $1 - 7/18$

Taking LCM

$$= (18 - 7)/ 18$$

$$= 11/18$$

5. A, B and C can do a piece of work in 12, 15 and 20 days respectively. How long will they take to do it working together?

Solution:

A can do a piece of work in 12 days

B can do a piece of work in 15 days

C can do a piece of work in 20 days

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A's one day work = $1/12$

B's one day work = $1/15$

C's one day work = $1/20$

So A, B and C's together one day work = $1/12 + 1/15 + 1/20$

Taking LCM

$$= (5 + 4 + 3) / 60$$

$$= 12/60$$

$$= 1/5$$

Hence, they can do the work in 5 days.

6. Two taps can fill a cistern in 10 hours and 8 hours respectively. A third tap can empty it in 15 hours. How long will it take to fill the empty cistern, if all of them are opened together?

Solution:

It is given that

First tap can fill a cistern in 10 hours

Second tap can fill a cistern in 8 hours

Third tap can empty the cistern in 15 hours

First tap's one hour work = $1/10$

Second tap's one hour work = $1/8$

Third tap's one hour work = $1/15$

Here if all the taps are opened together then their one hour work = $1/10 + 1/8 - 1/15$

Taking LCM

$$= (12 + 15 - 8) / 120$$

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So we get

$$= (27 - 8) / 120$$

$$= 19/120$$

All the taps can fill the cistern in = $120/19$ hours = $6 \frac{6}{19}$ hours

7. Mohit can complete a work in 50 days, whereas Anuj can complete the same work in 40 days.

Find:

(i) work done by Mohit in 20 days.

(ii) work left after Mohit has worked on it for 20 days.

(iii) time taken by Anuj to complete the remaining work.

Solution:

It is given that

Mohit can complete a work in 50 days

Anuj can complete the same work in 40 days

Mohit's one day work = $1/50$

Anuj's one day work = $1/40$

(i) Work done by Mohit in 20 days = $1/50 \times 20 = 2/5$

(ii) Work left after Mohit has worked on it for 20 days = $1 - 2/5 = (5 - 2)/5 = 3/5$

(iii) Time taken by Anuj to complete the remaining work = $40 \times 3/5$ days = 24 days

8. Joseph and Peter can complete a work in 20 hours and 25 hours respectively.

Find:

(i) work done by both together in 4 hrs.

(ii) work left after both worked together for 4 hrs.

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(iii) time taken by Peter to complete the remaining work.

Solution:

Time taken by Joseph to complete a work = 20 hours

Time taken by Peter to complete a work = 25 hours

Joseph's one hour work = $\frac{1}{20}$

Peter's one hour work = $\frac{1}{25}$

So both Joseph' and Peter's work in one hour = $\frac{1}{20} + \frac{1}{25}$

Taking LCM

$$= \frac{(5 + 4)}{100}$$

$$= \frac{9}{100}$$

(i) Work done by both together in 4 hrs = $\frac{9}{100} \times 4 = \frac{9}{25}$

(ii) Work left after both worked together for 4 hrs = $1 - \frac{9}{25}$

Taking LCM

$$= \frac{(25 - 9)}{25}$$

$$= \frac{16}{25}$$

(iii) Time taken by Peter to complete the remaining work = $25 \times \frac{16}{25} = 16$ hours

9. A is able to complete $\frac{1}{3}$ of a certain work in 10 hrs and B is able to complete $\frac{2}{5}$ of the same work in 12 hrs.

Find:

(i) how much work can A do in 1 hour?

(ii) how much work can B do in 1 hour?

(iii) in how much time will the work be completed, if both work together?

Solution:

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It is given that

A can complete $\frac{1}{3}$ of a certain work in 10 hours

Time in which A can do full work = $(10 \times 3) / 1 = 30$ hours

B can complete $\frac{2}{5}$ of a certain work in 12 hours

Time in which B can do full work = $(12 \times 5) / 2 = 30$ hours

(i) Work done by A in 1 hour = $\frac{1}{30}$

(ii) Work done by B in 1 hour = $\frac{1}{30}$

(iii) Work done by both in 1 hour = $\frac{1}{30} + \frac{1}{30} = \frac{2}{30} = \frac{1}{15}$

Hence, both can finish the work in 15 hours.

10. Shaheed can prepare one wooden chair in 3 days and Shaif can prepare the same chair in 4 days. If they work together, in how many days will they prepare:

(i) one chair?

(ii) 14 chairs of the same kind?

Solution:

Work done by Shaheed in one day = $\frac{1}{3}$

Work done by Shaif in one day = $\frac{1}{4}$

So the work done by both in 1 day = $\frac{1}{3} + \frac{1}{4}$

By taking LCM

$$= (4 + 3) / 12$$

$$= 7/12$$

So both can prepare the chair in $12/7 = 1 \frac{5}{7}$ days

We know that

One chair can be prepared in $1 \frac{5}{7}$ days

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So 14 chairs can be prepared in $= 12/7 \times 14 = 24$ days

11. A, B and C together finish a work in 4 days. If A alone can finish the same work in 8 days and B in 12 days, find how long will C take to finish the work.

Solution:

It is given that

A, B and C together finish the work in 4 days

Work done by A, B and C together in 1 day $= \frac{1}{4}$

A's one day work $= \frac{1}{8}$

B's one day work $= \frac{1}{12}$

C's one day work $= \frac{1}{4} - (\frac{1}{8} + \frac{1}{12})$

By taking LCM

$$= (6 - [3 + 2]) / 24$$

$$= 1/24$$

Hence, C can finish the work in 24 days.



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