Inverse Proportion

Exercise 1

1) If 6 men build a wall in 10 days, how long will it take 4 men?
2) If 8 men build a wall in 3 days, how long will it take 6 men?
3) If 10 men build a wall in 7 days, how long will it take 7 men?
4) If 6 men dig a trench in 6 days, how long will it take 9 men?
5) If 40 women complete a job in 21 days, how long will it take 7 women?
6) If 24 women complete a job in 39 days, how long will it take 36 women?
7) If 18 women complete a job in 17 days, how long will it take 34 women?
8) If 15 men can build a wall in 6 hours, how long will it take 5 men?
9) If 6 men can dig a trench in 12 hours, how long will it take 24 men?
10) 4 men can build a shed in 9 hours. How long would it take 6 men?
11) If 4 pipes empty a bath in 1 hour, how long will it take 2 pipes?
12) If 1 tap fills a bath in 30 minutes, how long will it take 2 taps?
13) A ship has enough food to supply 600 passengers for 3 days. How long would the food last for 300 passengers?
14) A farmer has enough hay to feed 8 horses for 2 days. How long would the hay last for 2 horses?
15) 8 people can unload a ship in 15 hours. How long will it take 3 people?
16) A farmer employs 12 men to do a job in 10 days. How long would it have taken 5 men?
17) A bridge was painted by 8 men in 6 days. How long would it have taken 12 men?
18) 4 men can do a job in 12 hours.  
How many men would it take to do the job in 2 hours?

19) 6 women can do a job in 8 hours.  
How many women would it take to do the job in 6 hours.

20) Usually it takes 5 hours for 12 men to do a job.  
How many men are needed to do the job in 2 hours?

Exercise 2

1) A garrison has enough food to last 1000 soldiers for 21 days.  
How long will the food last for 1400 soldiers?

2) A ship has sufficient food to last 900 people for 4 weeks. How long will the food last for 1200 people?

3) If a quantity of food can last 20 people for 6 days, how long would it last 30 people?

4) If a 700 watt microwave oven took 4 minutes to cook a piece of meat.  
How long would it take an 800 watt microwave to cook the same meat?

5) A car travelling at 80 km/h completes a certain journey in 60 minutes.  
How long would it take for a car travelling at 120 km/h?

6) A car travelling at 60 km/h completes a journey in 90 minutes.  
How long would it take for a car travelling at 180 km/h?

7) Six friends each pay £70 towards renting a ski chalet. At the last minute two more pals are invited on the holiday.  
If the cost is shared equally, how much will each of them pay?

8) Nine teams each of four pupils enter a quiz.  
They are reorganised into six teams.  
How many will be in each team now?
9) At Highmoor School there are 8 lessons of 35 minutes each day. They change to a new timetable of 7 lessons a day. If the total teaching time remains the same how long is each lesson with the new timetable?

10) Comfy Coaches have two sizes of coach. The larger has 72 seats and the smaller 48 seats. To take fans to an away match they reckon they need exactly eight of the larger coaches. How many small coaches would be needed for the same number of fans?

11) A piece of land can be divided into 20 individual allotments each with an area of 120 m$^2$. It is decided to increase the number of allotments to 24. Calculate the area of each of these allotments.

12) Five lottery winners each received £840 000. If the same amount was shared between seven winners, how much would each person receive?

13) Eight friends rent a caravan for a fortnight’s holiday. They each agree to pay £73.50. One of them has to drop out, leaving seven of them to share the same bill. How much does each of them have to pay?

14) Main Street High School holds a monthly lottery for charity. In January two winners each receive £450. In February the total prize money is the same. If there are three winners how much does each one win?

15) Mike takes on the challenge of walking from John O’Groats to Land’s End. His target is to average 20 miles a day and that will mean a total walk of 42 days. If he averaged 24 miles a day, how many days would it take?

16) A team of 14 relay runners plans to run between Glasgow and Fort William. Each of them will run 20 km. They recruit two more runners to share the distance. How far will each member run now?
17) Trendy Textiles Plc give the workforce of 60 employees a Christmas bonus of £250 each. The following year the total bonus remains the same but there are ten fewer employees. How much is each worker given?

18) Gill has enough food to last her five horses for 12 days. How many days will the food last if the number of horses is:

   a) increased by one
   b) decreased by one?

19) When the speed of a car is 24 mph, a certain journey takes 80 minutes. What must the speed be for the same journey to take 60 minutes?

20) A ship has enough coal in its bunkers to last 6 days, if it uses 105 tons per day. If it uses 140 tons per day, how long should the coal last?

Exercise 3

1) A journey takes 6 hours travelling at 80 km/h. How long would the journey take at 100 km/h?

2) If 45 workers can complete a job in 12 weeks, how many extra workers would it take to finish the job in 10 weeks?

3) A journey takes 4½ hours at 70 mph. On the return journey the average speed is 60 mph. How much longer does the return journey take?

4) If 20 people take 7 days to harvest crops, how many days less would it take 35 people?

5) A farmer can feed 60 cattle for 8 weeks. If he sells 20 of the cattle how much longer will the feeding stuff last?

6) A journey takes 12 hours at 75 km/h. How much longer would the journey take at 60 km/h?
7) A plane flies for 8 hours at 330 mph. If the plane did the same journey at 440 mph how much less time would it take?

8) A contract takes 189 men 54 days to complete. How much longer would it take 126 men?

9) At a scout camp there is enough food for 160 boys for 12 days. If 40 boys fewer than expected turn up, how much longer would the food last?

10) A man walks for 8 hours at 5 mph. Had he walked at 4 mph how much longer would he have taken?

11) Four lucky people share the lottery roll-over. They each get £2 187 500.

If one more person had shared the prize, how much less would each person have received?

12) At an average speed of 80 km/h, Barbara can drive from Glasgow to Edinburgh in 54 minutes.

How much time would it save if she could increase her average speed by 10 km/h?

13) A container of shampoo will fill 800 small bottles each of 60 ml.

a) How many large 250 ml bottles could be filled from the container?

b) The container will fill 320 medium sized bottles. Calculate the volume of a medium sized bottle.

14) A contractor undertakes to do a certain job in 12 days. He employs 50 men, but finds that after 8 days only half of the work is done. How many men will he require to have working at the job during the remaining time to complete the work in time?

15) A builder contracts to complete a job in 48 days, and employs 14 people to do so. After 16 days the work is held up for 11 days by bad weather. How many extra people would now be needed to finish the job on time?