Chapter 1	Direct and Inverse Proportion
• Solve problem involving direct and inverse proportion	

1.1 Direct Proportion

1. The wages for 10 men who work for 6 days amount to $800. Find the wages of 4 men who work for 3 days.
2. It will take 24 men working 9 hours a day to build a house in 45 days. Given that all men work at the same rate
    a. How many days will 24 men take to build the same house if they work 8 hours a day?
    b. How many hours per day must 29 men work if the house is to be completed in 48 days?
3. The mass of a hemisphere, m g is directly proportional to the cube of its radius, r cm. If a hemisphere of radius 4 cm has a mass of 192 g.
    a. Express m in term of r
    b. Find the radius of another hemisphere with a mass of 81 g
4. The period (P seconds) of a simple pendulum is directly proportional to the square root of its length (L cm). When the length is 64 cm, the period is 3.2 seconds. Find
    a. The period when the length is 1.44m
    b. The length when the period is 2 seconds
5. P is directly proportional to q^2. Given the P = 15 for a particular value of q. Find the value of P when this value of q is increased by 200%
6. If y is directly proportional to the square of x and the difference in the values of y when x=2 and x = 6 is 40. Find the value of y when x = 4
7. Y is directly proportional to the cube of x. It is also know that y=10 for a particular value of x. Find the value of y when this value of x is halved.
8. Given that y varies directly as x^2, find the percentage increase in y when x doubles

1.2 Inverse Direct Proportion

1. 16 worker can build a wall in 25 days. How many worker are needed if the wall is to build in 10 days?
2. It takes 10 men 6 days to build a hut. If all man work at the same rate, find
    a. How many days would 8 men take?
    b. How many men would be needed to complete the task in 5 days?
3. It is given that y is inversely proportional to the square of x and y = 1.5 when x = 4.
    a. Express y in term of x
    b. Calculate the values of x when y = 6
4. Given that p is inversely proportional to the cube root of q and that p=2 when q = 216.
    a. Express p in term of q
    b. Find the value of p when q = $\frac{1}{27}$
5. The time taken (T hours) to fill a pool is inversely proportional to the number of taps (n) used. It takes 1.5 hours to fill the pool when 2 taps are in use at the same time. Find
    a. The equation connecting T and n
    b. The number of taps required to fill the pool in 15 min
    c. The time taken to fill the pool when 5 taps are used, giving your answer in minutes.
6. It is given that m is inversely proportional to the cube of n. Given m=32 for a particular value of n. Find the value of m when this value of n is halved
7. Given U is inversely proportional to the square root of P and U is 8 for certain value of P. Find U when P is 4 times of that value.

8. Y is inversely proportional to the square of x. It is given that y=6 for a certain value of x. Find the value of y when this value of x is doubled?
9. P is inversely proportional to the square of q. It is known that p=8 for a particular value of q. When q increased by 100%, find
    a. The value of p
    b. The percentage change in the value of p.

Chapter 1.1 Answers
1. $160
2. (a) 50.625 days (b) 10-1/8 hrs per day
3. (a) $m=3r^3$ (b) 3 cm
4. (a) 4.8 second (b) 25 cm
5. 135
6. Y= 20
7. 1-1/4
8. 300%

Chapter 1.2 Answers
1. 40 worker
2. (a) 7.5 days (b) 12 men
3. (a) $y=24/x^2$ (b) $x = \pm 2$
4. (a) $p = \frac{12}{\sqrt[3]{q}}$ (b) 36
5. (a) $T = \frac{3}{n}$ (b) 12 taps (c) 36
6. 256
7. U=4
8. $y = 1\frac{1}{2}$
9. (a) 2 (b) 75%