1. The sum of two numbers is 22, and the product of these two numbers is 120. What are the numbers?

2. The difference of two numbers is 4, and the product of these two numbers is 140. What are the numbers?

3. The difference of two numbers is 8, and the sum of the squares of these two numbers are 320. What are the numbers?

4. The sum of the squares of two consecutive even integers is 244. What are these numbers?

5. The difference of the squares of two consecutive even integers is 60. What are these numbers?

6. The sum of the squares of two consecutive even integers is 452. What are these numbers?

7. Find three consecutive even integers such that the product of the first two is 38 more than the third integer.

8. Find three consecutive odd integers such that the product of the first two is 52 more than the third integer.

9. The product of the ages of Alan and Terry is 80 more than the product of their ages 4 years prior. If Alan is 4 years older than Terry, what are their current ages?

10. The product of the ages of Cally and Katy is 130 less than the product of their ages in 5 years. If Cally is 3 years older than Katy, what are their current ages?

11. The product of the ages of James and Susan in 5 years is 230 more than the product of their ages today. What are their ages if James is one year older than Susan?

12. The product of the ages (in days) of two newborn babies Simran and Jessie in two days will be 48 more than the product of their ages today. How old are the babies if Jessie is 2 days older than Simran?

13. A train travelled 240 km at a certain speed. When the engine was replaced by an improved model, the speed was increased by 20 km/hr and the travel time for the trip was decreased by 1 hr. What was the rate of each engine?

14. Mr. Jones visits his grandmother, who lives 100 km away, on a regular basis. Recently, a new freeway has opened up, and although the freeway route is 120 km, he can drive 20 km/h faster on average and takes 30 minutes less time to make the trip. What is Mr. Jones's rate on both the old route and on the freeway?

15. If a cyclist had travelled 5 km/h faster, she would have needed 1.5 hr less time to travel 150 km. Find the speed of the cyclist.

16. By going 15 km per hr faster, a transit bus would have required 1 hr less to travel 180 km. What was the average speed of this bus?

17. A cyclist rides to a cabin 72 km away up the valley and then returns in 9 hr. His speed returning is 12 km/h faster than his speed in going. Find his speed both going and returning.

18. A cyclist made a trip of 120 km and then returned in 7 hr. Returning, the rate increased 10 km/h. Find the speed of this cyclist travelling each way.

19. The distance between two bus stations is 240 km. If the speed of a bus increases by 36 km/h, the trip would take 1.5 hour less. What is the usual speed of the bus?

20. A pilot flew at a constant speed for 600 km. Returning the next day, the pilot flew against a headwind of 50 km/h to return to his starting point. If the plane was in the air for a total of 7 hours, what was the average speed of this plane?

21. Find the length and width of a rectangle whose length is 4 cm longer than its width and whose area is 60 cm^2.

22. Find the length and width of a rectangle whose width is 10 cm shorter than its length and whose area is 200 cm^2.

23. A large rectangular garden in a park is 120 m wide and 150 m long. A contractor is called in to add a brick walkway to surround this garden. If the area of the walkway is 2800 m^2, how wide is the walkway?

24. A park swimming pool is 10 m wide and 25 m long. A pool cover is purchased to cover the pool, overlapping all 4 sides by the same width. If the covered area outside the pool is 74 m^2, how wide is the overlap area?

25. In a landscape plan, a rectangular flowerbed is designed to be 4 m longer than it is wide. If 60 m^2 are needed for the plants in the bed, what should the dimensions of the rectangular bed be?

26. If the side of a square is increased by 5 units, the area is increased by 4 square units. Find the length of the sides of the original square.

27. A rectangular lot is 20 m longer than it is wide and its area is 2400 m^2. Find the dimensions of the lot.

28. The length of a room is 8 m greater than its width. If both the length and the width are increased by 2 m, the area increases by 60 m^2. Find the dimensions of the room.