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Topic: Solutions to quadratic equations (Word Problems)

Q1: The sum of three consecutive integers is 84. Find these three integers.

Q2: A route up a mountain is 20 km long. John followed this route at x km/hr.

1. Write down the expression in terms of x, for the number of hours he took to walk up the mountain.
2. He came down a mountain by a different route. The length of this route was 25 km. His average speed coming down the mountain was 2 km/h greater than his average speed going up the mountain.
3. Write down the expression in terms of x, for the number of hours he took to walk down.
4. Solve the equation3x2 + 16x – 80 = 0, giving both answer correct to three decimal places.
5. Calculate, correct to the nearest minute, the total time John took to go up and come down the mountain.

Q3: A road tanker holds 24 tonnes of oil.

1. In cold weather in can pump out x tonnes of oil per minute. Write down an expression, in terms of x for the number of minutes it takes to empty the tanker in cold weather.
2. In hot weather in can pump out( x + 0.5 ) tonnes of oil per minute. Write down an expression, in terms of x for the number of minutes it takes to empty the tanker in hot weather.
3. It takes 2 minutes longer to empty the tanker in cold weather than in hot weather. Write down an equation in x and show that it simplifies to 2x2 + x – 12 = 0.
4. Solve the equation 2x2 + x – 12 = 0 , giving the solutions coorect to 3 decimal places.
5. Find the time taken in minutes and seconds, correct to the nearest seconds, to empty the tanker in cold weather.

Q4: A light aircraft flew from Maseru to Nata and returned to Maseru.

1. The distance from Masreu to Nata is 1080 km.
2. On the out ward flight, the average speed of aircraft was x km/h. Write down the expression in terms of x, for the time taken in hours.
3. On the return flight the average speed was 30 km/h greater then the average speed on the outward flight. Write down the expression in terms of x, for the time taken in hours on the returned flight.
4. The time taken in returned flight was half an hour less than the time taken on the outward flight. Form an equation in x and shoe that it reduces to x2 + 30x - 64800 = 0
5. Solve the equation x2 + 30x - 64800 = 0
6. Calculate:
7. The time taken in terms of hours on the outward flight.
8. The average speed of the whole flight from Maseru to Nata and back to Maseru.

Q5: B C Q R

P S

x + 5

A D

x

ABCD and PQRS are rectangles. Each has an area of 13cm2. AD = x cm and PS = (x + 5) cm

1. Find in terms of x an expression for
2. AB
3. PQ
4. Given that AB = 3cm greater than PQ, form an equation in x and show that it simplifies to 3x2 + 15x – 65 = 0
5. Solve the equation 3x2 + 15x – 65 = 0, giving each answer correct to 2 decimal places.
6. (i) Show that the perimeter od ABCD is 14.9cm correct to 3 significant figures.
7. Find the difference between the perimeter of two rectangles.

Q6:

***h***

The length of the base of the parallelogram is 6cm more than its perpendicular height, ***h*** cm.The area of this parallelogram is 33.25 cm2.

1. Show that *h* satisfies the equation 4***h****2* + 24***h***– 133 = 0
2. Solve the equation 4***h****2* + 24***h***– 133 = 0
3. Find the length of the base of the parallelogram.