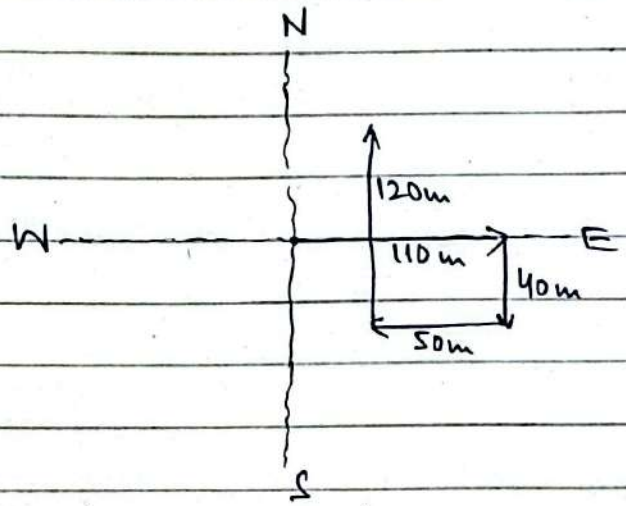
CSS – 2022
Part – II
Section – B

Q:6

(a) For his morning walk Aslam went 110 meters towards east from his house and then turned right to keep walking for 40 meters before turning right again. After continuing to walk for 50 more meters, he turned right again and kept walking for another 120 meters, before he sat down on a bench at the park. How far was the bench located from his house? [5]

Ans



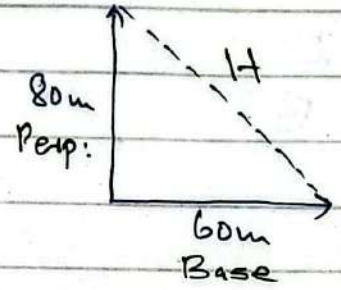
Now: Subtraction of Vectors;

(i) 110 m — 50m = 60m

(ii) 40m — 120 m = 80m

⇒ P.T.O

Now,



Apply Pythagoras Theorem;

$$H = \sqrt{B^2 + P^2}$$

$$H = \sqrt{(60)^2 + (80)^2} = \sqrt{3600 + 6400}$$

$$H = \sqrt{10000}$$

$$H = 100m$$

Hence, Bench is 100m far from his house.

Ans

Q. 7

(a) The sum of three consecutive odd numbers is 273. What are the three odd numbers? [5]

Ans

Number 1 = x

Number 2 = $x + 2$

Number 3 = $x + 4$

⇒ P.T.O

Now; Sum of three consective odd numbers;

$$x + x+2 + x+4 = 273$$

$$3x + 6 = 273$$

$$3x = 273 - 6 = 267$$

$$x = \frac{267}{3} = 89$$

$$\boxed{x = 89}$$

Now put the value of $x = 89$ in equations.

Number 1 = 89
Number 2 = $x+2 = 89+2 = 91$
Number 3 = $x+4 = 89+4 = 93$

Hence; Numbers are 89, 91, 93

Ans

Q.7

(b) Find the missing number in the given series:

(i) 4, 16, 36, 64, ?, 144 (ii) 30, 29, 27, ?, 20, 15

(iii) 1, 7, 15, 25, ?, 51 (iv) 0, 2, 6, 12, 20, 30, ?

(v) 48, 24, 72, 36, 108, ? [5]

⇒ P.T.O

Ans:

(i) 4, 16, 36, 64, ?, 144.

Sol:

4, 16, 36, 64, 100, 144

+12 +20 +28 +36

(ii) 30, 29, 27, ?, 20, 15.

Sol:

30, 29, 27, 24, 20, 15.

(30, 29) (27, 24) (20, 15)

-1 -3 -5

(iii) 1, 7, 15, 25, ?, 51.

Sol:

1, 7, 15, 25, 37, 51

+6 +8 +10 +12

(iv) 0, 2, 6, 12, 20, 30, ?

Sol:

0, 2, 6, 12, 20, 30, 42

+2 +4 +6 +8 +10 +12

(v) 48, 24, 72, 36, 108, ?

Sol:

48, 24, 72, 36, 108, 54

(48, 24) (72, 36) (108, 54)

48÷2 72÷2 108÷2

Q:08

(d) If in a certain language, BROTHER is written as QDGSNQA, then in the same language, SISTER would be written as...? [5]

Ans

2 18 15 20 8 5 18 17 4 7 19 14 17 1

BROTHER : QDGSNQA

19 9 19 20 5 18

SISTER : QDSRHR

Ans

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Q:6

(b) Find the missing number in the series below;

(i) 1, 8, 4, 27, 9, ? (ii) 3, 6, 8, 16, 18, ?

(iii) 2, 8, 512, ? (iv) 81, 9, 64, 8, ?, 12

(v) 6, 11, 21, 36, 56, ? [5]

Ans (i) 1, 8, 4, 27, 9, ?

Sol 2^3 3^3 4^3

1, 8, 4, 27, 9, 64

Ans

⇒ P.T.O

(iii) 3, 6, 8, 16, 18, ?

Sol

3, 6, 8, 16, 18, 36

3×2 6+2 8×2 16+2 18×2 Ans

(iv) 2, 8, 512, ?

Sol

2, 8, 512, 2048

2^1 2^3 2^9 2^{11}

(iv) 81, 9, 64, 8, ?, 12

Sol

81, 9, 64, 8, 144, 12

(81, 9) (64, 8) (144, 12)

81÷9 64÷8 144÷12

(v) 6, 11, 21, 36, 56, ?

Sol

6, 11, 21, 36, 56, 81

+5 +10 +15 +20 +25 Ans

CSS-2024
Part-II
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Q. 6

(a) Find the missing numbers in the series below:

(i) 121, 11, 81, 9, ?, 7

(ii) 100, 50, 25, ?, 6.25

(iii) 4, 9, 64, 125, 1296, ?

(iv) 2, 5, 12, 24, 48, ?

(v) 44, 22, 66, 33, 132, ? [5]

Ans

(i) 121, 11, 81, 9, ?, 7

Sol:

121, 11, 81, 9, 49, 7

11^2 11^1 9^2 9^1 7^2 7^1

(ii) 100, 50, 25, ?, 6.25

Sol:

100, 50, 25, 12.5, 6.25

$\frac{100}{2}$ $\frac{50}{2}$ $\frac{25}{2}$

(iii) 4, 9, 64, 125, 1296, ?

Sol: 2^2 3^2 4^3 5^3 6^4 7^4

4, 9, 64, 125, 1296, 2401

Ans

⇒ P.T.O

(iv) 2, 5, 12, 24, 48, ____

Sol

2, 5, 12, 24, 48, 96

$2^1 + 0 = 2$
$2^2 + 1 = 5$
$2^3 + 4 = 12$
$2^4 + 8 = 24$
$2^5 + 16 = 48$
$2^6 + 32 = 96$

Ans

(v) 44, 22, 66, 33, 132, ____

Sol

44, 22, 66, 33, 132, 66

(44, 22) (66, 33) (132, 66)

44 ÷ 2 66 ÷ 2 132 ÷ 2

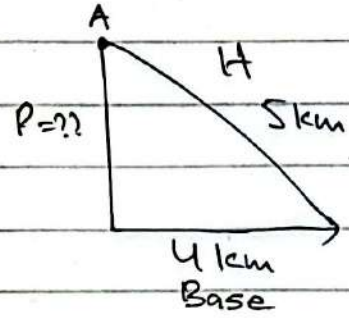
Ans

Q:. 7

(a) A man travels over the path of a right-angle triangle having base and hypotenuse 4 and 5 km, respectively. After a complete round he continues in the same direction for 6 km and then turns at 90 degree and continues for another 8 km. How long he has travelled and how far he is from his starting point? [5]

Ans

Step #01



First to find Perpendicular;

Apply Pythagoras Theorem:

$$H^2 = B^2 + P^2$$

$$P = \sqrt{H^2 - B^2}$$

$$P = \sqrt{5^2 - 4^2}$$

$$P = \sqrt{25 - 16}$$

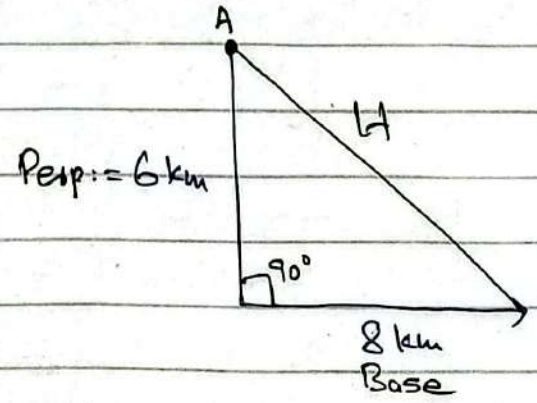
$$P = \sqrt{9}$$

$$\boxed{P = 3 \text{ km}}$$ Ans

Now

P.T.O

Step #02



Now; Find Hypotenous by applying Pythagoras Theorem:

$$H = \sqrt{B^2 + P^2}$$
$$H = \sqrt{(8)^2 + (6)^2}$$
$$H = \sqrt{64 + 36}$$
$$H = \sqrt{100}$$
$$\boxed{H = 10 \text{ km.}}$$

Now (i) How long he has travelled;
We sum-up all the distance:
Total distance = $3+4+5+6+8 = 26$ km.
he covered

Hence; He travelled 26 km.

Now (ii) How far he is from starting point?

Hence; He is 10 km far from starting point.

Ans

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Q.7

(d) Arrange the following fractions in the descending order.

(a) $\frac{7}{12}, \frac{4}{7}, \frac{9}{14}, \frac{25}{42}$

(b) $\frac{5}{8}, \frac{7}{12}, \frac{5}{9}, \frac{13}{24}$

(c) $\frac{6}{35}, \frac{5}{21}, \frac{2}{7}, \frac{4}{15}$

(d) $\frac{2}{5}, \frac{6}{11}, \frac{7}{15}, \frac{9}{20}, \frac{13}{25}$

(e) $\frac{1}{5}, \frac{2}{7}, \frac{3}{8}, \frac{4}{13}, \frac{5}{17}$.

Ans: (a) $\frac{7}{12}, \frac{4}{7}, \frac{9}{14}, \frac{25}{42}$

Sol: Descending Order

$\frac{9}{14}, \frac{25}{42}, \frac{7}{12}, \frac{4}{7}$.

(b) $\frac{5}{8}, \frac{7}{12}, \frac{5}{9}, \frac{13}{24}$

Sol: Descending Order.

$\frac{5}{8}, \frac{7}{12}, \frac{5}{9}, \frac{13}{24}$.

⇒ P.T.O

(c) $\frac{6}{35}, \frac{5}{21}, \frac{2}{7}, \frac{4}{15}$

Sol: Descending Order

$\frac{2}{7}, \frac{4}{15}, \frac{5}{21}, \frac{6}{35}$

(d) $\frac{2}{5}, \frac{6}{11}, \frac{7}{15}, \frac{9}{20}, \frac{13}{25}$

Sol: Descending Order.

$\frac{2}{5}, \frac{6}{11}, \frac{13}{25}, \frac{7}{15}, \frac{9}{20}$

(e) $\frac{1}{5}, \frac{2}{7}, \frac{3}{8}, \frac{4}{13}, \frac{5}{17}$.

Sol: Descending Order

$\frac{1}{5}, \frac{3}{8}, \frac{4}{13}, \frac{5}{17}, \frac{2}{7}$ Ans