**Quiz Date: 22nd April 2020**

Directions (1-5): **The following information is about the production of bikes by 3 different companies from Monday to Friday in a specific week. Read the information carefully and answer the following question:**

The total production by 3 companies on Monday was 540 out of which 33 ⅓% bikes were produced by Hero. The number of bikes produced by Bajaj on Monday are less than the bikes produced by Hero on Monday by the same extent as the number of bikes produced by Honda on Monday is more than the bikes produced by Hero on Monday. The difference between bikes produced by Bajaj and Honda on Monday is 40.

150 bikes are produced by Hero on Tuesday, which is 100 less than the bikes produced by the same company on Wednesday. A total of 910 bikes were produced by Hero from Monday to Friday. The ratio between bikes produced by Hero on Thursday to bikes produced by the same company on Friday is 5: 6.

220 bikes were produced by Bajaj on Tuesday, which is 80 less than the bikes produced by Honda on Wednesday. A total of 570 bikes were produced on Tuesday, which is 76% of the total bikes produced on Wednesday. The number of bikes produced by Honda on Thursday is 66⅔% more than bikes produced by Hero on the same day. Total 580 bikes were produced on Thursday. The number of bikes produced by Honda on Friday is same as that on Monday. 140 bikes were produced by Bajaj on Friday.

Q1. Find the ratio between total bikes produced on Monday to that on Wednesday.
(a) 18 : 29
(b) 18 : 25
(c) 18 : 31
(d) 3 : 5
(e) 5: 3

Q2. Find the total number of bikes produced by Bajaj from Monday to Friday.
(a) 900
(b) 980
(c) 950
(d) 960
(e) 800

Q3. Find the average number of bikes produced per day by Honda from Monday to Friday.
(a) 250
(b) 220
(c) 270
(d) 240
(e) 230

Q4. On which pair of days out of the following, the number of bikes produced by Hero is the same?
(a) Tuesday and Wednesday
(b) Wednesday and Thursday

(c) Tuesday and Thursday
(d) Monday and Wednesday
(e) Monday and Tuesday

Q5. On which day the total number of bikes produced was the maximum?
(a) Monday
(b) Tuesday
(c) Wednesday
(d) Thursday
(e) Friday

**Directions (6-10):** In each of these questions, two equations I and II are given. You have to solve both the equations and give answer
**(a) if $x > y$**
**(b) if $x \geq y$**
**(c) if $x < y$**
**(d) if $x \leq y$**
**(e) if $x = y$ or no relation can be established between $x$ and $y$**

**Q6. I.** $x^2 - 264 = 361$
   **II.** $y^3 - 878 = 453$

**Q7. I.** $3x^2 + 14x + 15 = 0$
   **II.** $3y^2 - 13y + 14 = 0$

**Q8. I.** $12x^2 - 17x + 6 = 0$
   **II.** $y^2 - 16y + 63 = 0$

**Q9. I.** $x^2 - 48x + 575 = 0$
   **II.** $46y^2 - 35y - 11 = 0$

**Q10. I.** $15x^2 - 11x - 12 = 0$
**II.** $20y^2 - 49y + 30 = 0$

Directions (11-15): **Study the following data related to seven friends carefully to answer the questions that follow.**

Parul, Niharika, Anshu, Pooja, Jyoti, Aditi and Komal are seven friends living along a straight road in same manner as given starting with Parul.

Pooja lives 150 km away from Parul, and takes 1 hr 40 min to reach to Aditi. Parul takes 5 hours to reach to Aditi who lives 250 km away from her also Parul takes 72 min to reach Niharika's house. When Anshu and Komal move toward each other at 70 km/hr and 50 km/hr respectively, they meet after 1 hr 35 min. Anshu takes only $34\frac{2}{7}$ min to reach to Pooja. Niharika being 240 km away from Komal crosses Jyoti after 5 hr 40 min and meet Komal after 8 hours from start. Jyoti and Aditi meet after 24 minutes if they start moving simultaneously towards each other with speed in 3: 2 ratio.

Note: Speed of all remains constant.

Q11. On a weekend, all friends decided to meet at Parul's house at 9: 00 pm sharp. At what time should Jyoti leave her house to get at location in time if she spends 10 minutes at Niharika's house?
(a) 2 : 10 pm
(b) 2 : 45 pm
(c) 1 : 10 pm
(d) 1 : 30 pm
(e) 3 : 45 pm

Q12. Niharika and her boyfriend together left their office at 6: 30 pm and moved towards their home with same speed as Niharika. Their Office is 120 km away from Jyoti's house in opposite direction of Niharika's house. Find the distance of house of Niharika's house from her boyfriend's house if she dropped her boyfriend at his home at 7: 05 pm.
(a) 280 km
(b) 265.5 km
(c) 252 km
(d) 272.5 km
(e) 264 km

Q13. Find the ratio of distance between residence of Parul and Komal and that of Anshu and Jyoti.
(a) 2 : 5
(b) 5 : 2
(c) 3 : 1
(d) 7 : 3
(e) 4 : 5

Q14. All friends decided to meet at Pooja's house, with the condition that they have to move towards Pooja house with the speed of the next friend they meet in the way starting with Parul and Komal living at opposite ends. Find the difference in the time when the two groups reach at destination. (rounded off up to two decimal points)
(a) 0.52 hr
(b) 2.31 hr
(c) 1.23 hr

(d) 2.51 hr
(e) 1.82 hr

Q15. By what percent speed of Anshu is more or less than that of Komal's speed?
(a) 32%
(b) 45%
(c) 30%
(d) 40%
(e) 25%

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**Solutions**

**S (1-5)**

Hero Bikes produced on Monday $= \frac{1}{3} \times 540 = 180$

Let number of bikes produced by Bajaj on Monday are less than the bikes produced by Hero on Monday by = x

So, no. of Bajaj bikes produced on Monday = 180 – x

And, no. of Honda bikes produced on Monday = 180 + x

So, no. of Honda bikes produced on Monday > no. of Bajaj bikes produced on Monday

Bikes produced by Bajaj on Monday - Honda bikes produced on Monday = 40

So, Bajaj bikes produced on Monday = 160

Honda bikes produced on Monday = 200

Bikes produced by Hero on Wednesday = 150 + 100 = 250

Let bikes produced by Hero on Thursday and Friday be 5a and 6a respectively.

So, $180 + 150 + 250 + 5a + 6a = 910$

$5a = 150 \text{ and } 6a = 180$

bikes produced by Honda on Wednesday = 220+80 = 300

Bikes produced by Honda on Tuesday $= 570 - 150 - 220 = 200$

total bikes produced on Wednesday $= \frac{570}{76} \times 100 = 750$

Bikes produced by Bajaj on Wednesday $= 750 - 250 - 300 = 200$

bikes produced by Honda on Thursday $= \frac{5}{3} \times 150 = 250$

Bikes produced by Bajaj on Thursday $= 580 - 250 - 150 = 180$

number of bikes produced by Honda on Friday = 200

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| **Hero** | 180 | 150 | 250 | 150 | 180 |
| **Bajaj** | 160 | 220 | 200 | 180 | 140 |
| **Honda** | 200 | 200 | 300 | 250 | 200 |
| | 540 | 570 | 750 | 580 | 520 |

S1. Ans.(b)
Sol.

$$\frac{540}{750} = 18:25$$

S2. Ans.(a)
Sol.
Total number of bikes produced by Bajaj from Monday to Friday = 900

S3. Ans.(e)
Sol.

$$\text{Required average} = \frac{1150}{5} = 230$$

S4. Ans.(c)
Sol.
No. of bikes produced on Tuesday and Thursday is same i.e. 150

S5. Ans.(c)
Sol.
Maximum number of bikes produced = 750, on Wednesday.

**S6. Ans.(e)**
**Sol.**

I. $x^2 - 264 = 361$    II. $y^3 - 878 = 453$
  or, $x^2 = 361 + 264$     or, $y^3 = 453 + 878$
  ∴ $x^2 = 625$        or, $y^3 = 1331$
  ∴ $x = \sqrt{625} = \pm 25$   ∴ $y = \sqrt[3]{1331} = 11$

Hence no relation can be established.

**S7. Ans.(c)**
**Sol.**

**I.** $3x^2 + 14x + 15 = 0$
or, $3x^2 + 9x + 5x + 15 = 0$
or, $3x(x + 3) + 5(x + 3) = 0$
or, $(3x + 5)(x + 3) = 0$
∴ $x = -\frac{5}{3}, -3$

**II.** $3y^2 - 13y + 14 = 0$
or, $3y^2 - 6y - 7y + 14 = 0$
or, $3y(y - 2) - 7(y - 2) = 0$
or, $(3y - 7)(y - 2) = 0$
∴ $y = \frac{7}{3}, 2$

Hence $x < y$

**S8. Ans.(c)**
Sol.

**I.** $12x^2 - 17x + 6 = 0$
or, $12x^2 - 9x - 8x + 6 = 0$
or, $3x(4x - 3) - 2(4x - 3) = 0$
or, $(3x - 2)(4x - 3) = 0$
∴ $x = \frac{2}{3}, \frac{3}{4}$

**II.** $y^2 - 16y + 63 = 0$
or, $y^2 - 9y - 7y + 63 = 0$
or, $y(y - 9) - 7(y - 9) = 0$
or, $(y - 7)(y - 9) = 0$
∴ $y = 7, 9$

Hence $x < y$

**S9. Ans.(a)**
Sol.

**I.** $x^2 - 48x + 575 = 0$
or, $x^2 - 23x - 25x + 575 = 0$
or, $x(x - 23) - 25(x - 23) = 0$
or, $(x - 25)(x - 23) = 0$
∴ $x = 25, 23$

**II.** $46y^2 - 35y - 11 = 0$
or, $46y^2 - 46y + 11y - 11 = 0$
or, $46y(y - 1) + 11(y - 1) = 0$
or, $(46y + 11)(y - 1) = 0$
∴ $y = -\frac{11}{46}, 1$

Hence $x > y$

**S10. Ans.(e)**
Sol.

**I.** $15x^2 - 11x - 12 = 0$
or, $15x^2 - 20x + 9x - 12 = 0$
or, $5x(3x - 4) + 3(3x - 4) = 0$
or, $(5x + 3)(3x - 4)$
∴ $x = \frac{-3}{5}, \frac{4}{3}$

**II.** $20y^2 - 49y + 30 = 0$
or, $20y^2 - 25y - 24y + 30 = 0$
or, $5y(4y - 5) - 6(4y - 5) = 0$
∴ $y = \frac{6}{5}, \frac{5}{4}$

No relation

**S (11-15)**

From the data,

| Friends | speed (km/hr) | Distance (km) with reference to Parul |
|---------|---------------|---------------------------------------|
| Parul | 50 | 0 |
| Niharika | 30 | 60 |
| Anshu | 70 | 110 |
| Pooja | 60 | 150 |
| Jyoti | 30 | 230 |
| Aditi | 20 | 250 |
| Komal | 50 | 300 |

**S11. Ans.(c)**

Sol.

Time taken by Jyoti in travelling $= \frac{230}{30} = 7$ hr 40 min

∴ Total time taken $= 7$ hr 40 min $+ 10$ min $= 7$ hr 50 min

i.e. she must left her house at 1 : 10 pm

**S12. Ans.(d)**

Sol.

Distance of office from Niharika house from office

$= 170 + 120 = 290$ km

Distance travelled by them in 35 minutes

$= 30 \times \frac{35}{60} = 17.5$ km

∴ Distance of Niharika's house from her

boyfriend's house $= 290 - 17.5 = 272.5$ km

**S13. Ans.(b)**

Sol.

Required ratio $= \frac{300}{230-110} = 5 : 2$

**S14. Ans.(c)**

Sol.

Group I (Parul, Niharika and Anshu)

Total time taken $= \frac{60}{50} + \frac{50}{30} + \frac{40}{70} = \frac{361}{105}$ hr

Group II (Jyoti, Aditi, Komal)

Total time taken $= \frac{50}{50} + \frac{20}{20} + \frac{80}{30} = \frac{14}{3}$ hr

$\therefore$ Required time $= \frac{14}{3} - \frac{361}{105} = \frac{490 - 361}{105} = \frac{129}{105}$ hr. $\approx 1.23$ hr

S15. Ans.(d)

Sol.

Required percent $= \frac{70 - 50}{50} \times 100 = 40\%$

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