

## Year 9 Finals 2024.

Y9/1. At Drua College the ratio of boys to girls is 2:3 and the ratio of girls to teachers is 8:1.

What is the ratio, in simplified form, of students to teachers?

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Y9/2. Calculate the average of the first 100 positive integers

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Y9/3 Evaluate  $\frac{2024^2 + 2024}{2025}$

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Y9/4. A car 3m long is travelling at 80km/h and overtakes a 17m long truck travelling at 70km/h. How long , in seconds, does it take the car to overtake the truck?

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Y9/5. Evaluate  $\left(1 - \frac{1}{4}\right) \times \left(1 - \frac{1}{5}\right) \times \left(1 - \frac{1}{6}\right) \times \left(1 - \frac{1}{7}\right) \times \dots \times \left(1 - \frac{1}{100}\right)$

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Y9/6. If everyone in a room shakes hands with everyone else and 45 handshakes take place, Calculate the number of people in the room.

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Y9/7. At a party, the ratio of girls to boys is 5 :4. Then, 18 boys join the party, and the ratio of boys to girls is 5 : 4 . Calculate the number of people originally at the party.

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Y9/8. A bag of apples was given to a family. The father selected  $\frac{1}{6}$  of the number of apples for himself. The mother selected  $\frac{1}{5}$  of the remainder and the three sons selected  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{2}$  of the successive remainders. The daughter took the remaining 40 apples.

How many apples were there in the bag?

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Y9/9. In a Mathematics Competition each correctly answered question gains 6 marks while 1 mark is deducted for each incorrect answer. Dinesh answered 25 questions and received a total of 73 marks.

How many questions Dinesh answered correctly?

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Y9/10. In how many different ways can 7 books be arranged in a row if 3 specified books must be together?

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Y9/11. Among the 200 students at a school, 100 play rugby, 50 play soccer and 60 play neither of the two sports. How many students play both sports?

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Y9/12. Diana leaves home at noon, travelling West at 40 km/h. At 2.30 pm her husband leaves, taking the same route at 60 km/h. At what time will she overtake her?

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Y9/13. Find the largest integer in the solution set of  $2 - 3x > -10$ .

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Y9/14. A train is 300 m long. It is travelling at a constant speed of 60 km/h. How long, in minutes, will it take to pass completely through a 2700 m tunnel?

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Y9/15. In the magic square shown, each of the rows, columns and diagonals adds to 18.

What is the sum of the corner numbers?

	6	
	4	

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Y9/16. At a Haroon's hardware 3 hammers and 2 screwdrivers cost \$95 while 4 hammers and 3 screwdrivers cost \$130.

How much does 7 hammers and 5 screwdrivers cost?

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Y9/17. What is the area of the triangle whose vertices are given by the points (1, 2), (4, 6) and (5, 5)?

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Y9/18. An aeroplane takes 3 hours and 30 minutes to fly from Island A to Island B. If it were to increase its speed by 20%, how long would the trip take? Give your answer in hours (h) and minutes (min).

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Y9/19. Towns A and B are 200 km apart. Ali is in town A and Ben is in town B. Ali drives towards town B at 55 km/ h. Leaving at the same time, Ben drives towards town A at 45km/h. After how many hours will they meet?

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Y9/20. What is the size of the smaller angle between the hour and minute hands of a clock at 12:22?

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