

Year 12 Finals 2025

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Y12/2. If goods are marked up 40% above the cost and then a 20% discount is offered, what is the percentage profit?

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Y12/3 Joan invests \$200. She earns interest at 3% per annum, compounded monthly. Joan's investment after 1.5 years is given by

$$200 (1.0025)^n$$

What is the value of n ?

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Y12/4. What is the range of $y = -x^2 + 2x - 3$?

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Y12/5. An employee begins working with a company on a annual salary of \$20 000. His salary increases by 10% per year. How much will he earn in the 3rd year of his employment?

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Y12/6. A company charges \$200 for each set of tools on orders of 150 or fewer sets. The cost to the buyer on every set is reduced by \$1 for each set in excess of 150. For what size order is revenue maximum?.

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Y12/7. Solve $4^x - 9(2^x) = -8$

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Y12/8. Simplify $\frac{6}{3 - \sqrt{3}}$

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Y12/9. Solve $7^{x+1} - 7^{x-1} = 336\sqrt{7}$

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Y12/10. In how many ways can six people sit around a table if two particular people must be seated next to each other?

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Y12/11. If $10^{2y} = 25$, find the value of 10^{2-y}

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Y12/12 If $x + y = 1$, what is the largest value of xy ?

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Y12/13. Solve $\frac{3x^2 + 20}{x} = 17$

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Y12/14 The diameter of a truck's wheel is $\frac{25}{6\pi}$ metres. The truck is travelling at 40 km/h. How many revolutions does the wheel make in 1 minute?

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Y12/15. Adding 3 years to the age of a boy would make him one quarter of his father's age. Two years ago, his father was three years more than six times his son's age. How old is the boy?

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Y12/16. The ratio of the speed of two trains is equal to the ratio of the time they take to pass each other going in the same direction to the time they take to pass each other going in the opposite directions. Find the ratio of the speed of the faster train to the slower train.

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Y12/17. A committee of 6 is to be formed from a group of 5 men and 4 women. How many different committees are possible if it must consist of at least 4 men?

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Y12/ 18. If each edge of a cube is increased by 300%, what is the percentage increase in the surface area?

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Y12/19. Simplify $\sqrt{7 + \sqrt{13}} - \sqrt{7 - \sqrt{13}}$

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Y12/20. Solve $\frac{x}{x-4} < 3$

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