

- Simple interest (S.I.) = $\frac{P \times R \times T}{100}$
- General formula for depreciation in the value of a quantity after t years can be written as $P \left(1 - \frac{r}{100}\right)^t$.

Perform

1. Find the principal for which a simple interest of ₹1450 is earned at a rate of 5% after 4 years.
2. Can simple interest be greater than compound interest if the principal, rate p.a. and time remain the same for both?
3. Rahul buys a bicycle for ₹3000. The price of the bicycle depreciates at a rate of 5% p.a. What will be its value after 1 year?

Competency Based Questions

Case-Study Based Questions

1. Mr Gupta owns a furniture shop in Delhi. He announces a year-end sale to clear out the old stock and introduce a new collection. He advertises various furniture items with marked prices alongside the discounts offered. Here is a list of the discounts on a few items:
 - A dining table set with a marked price of ₹15,000 is offered at a 25% discount.
 - A sofa set marked at ₹24,000 comes with a 20% discount.
 - A wardrobe with a marked price of ₹22,000 is available at a 15% discount.

Based on the above information, answer the following questions:

- a) Find the selling price of each item.
 - b) Find the overall discount percent offered by Mr Gupta on all three products together.
 - c) If the loss percent on selling the wardrobe is 5%, then what is the cost price of the wardrobe?
 - d) If the cost price for all the items together is ₹35000, what is Mr Gupta's profit or loss %?
2. Asif has invested a sum of ₹10,000 in a bank at a compound interest rate of 8% per annum. The interest is compounded annually, and he has planned to keep the investment for 3 years. Based on the above information, answer the following questions:

- a) What will be the amount at the end of the first year?
- b) Calculate the interest earned at the end of the second year.
- c) What is the total amount Asif will receive at the end of the third year?
- d) If Asif decides to invest an additional ₹5,000 at the same interest rate after the first year, what will be the new amount he will receive at the end of the third year?

HOTS

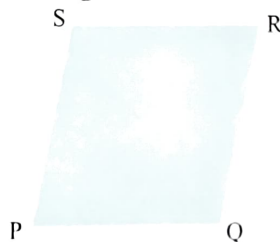
1. Govind bought a miniature fountain for ₹13,860 from a shopkeeper. This includes 18% GST. The shopkeeper made a profit of 10% on this deal. If the shopkeeper had spent ₹2000 on its polishing and transportation, what was the original cost price of the fountain?
2. Monica bought a real estate property for ₹3,00,000. She built a boundary wall around it and sold the property for ₹6,00,000. She made a profit of 20%. How much did she spend as overheads?

3. The compound interest on a sum of money compounded annually is ₹556.20 for 2 years at 6% p.a. What will be the simple interest on the same sum for half the rate of interest and double the number of years?
4. Varsha took an education loan of ₹2,00,000 from a bank at an interest rate of 12% compounded annually. Find her monthly installments if she has to pay back the loan over a period of 2 years.

Competency Based Questions

Case-Study Based Questions

1. An architect is creating a blueprint for a small garden in the shape of a parallelogram. Answer the following questions to help him find the details of the shape:



- If $\angle P = (4x + 10)^\circ$ and $\angle Q = (5x - 10)^\circ$, then find the measure of both the angles.
 - Is PQRS a rectangle? Justify your answer.
 - If the length of $PS = (2z + 5)$ m and the length of $QR = 11$ m, then find the value of z .
 - Find the perimeter of the garden if the length of $SR = 13$ m.
2. Four friends Arjun, Bhém, Chandra, and Deepak are playing a game where they have mentioned some special properties of some quadrilaterals on different slips. The slips are mixed thoroughly. Each friend has to draw a slip, read the clue, and then identify the quadrilateral from the clue.
- Arjun picked a slip and read, "I am a quadrilateral whose adjacent sides are equal and opposite sides are unequal." Identify the quadrilateral from this clue.
 - Bhém picked a slip and read, "I am a quadrilateral whose all sides and angles are equal." Identify the quadrilateral from this clue.
 - Chandra picked a slip and read, "I am a quadrilateral in which only one pair of sides is parallel." Identify the quadrilateral from this clue.
 - Deepak picked a slip and read, "I am a quadrilateral with all sides equal, and my diagonals bisect at right angles." Identify the quadrilateral from this clue.

HOTS

1. The perimeter of a rhombus is 60 cm. If one diagonal is 24 cm, find the length of the other diagonal.
2. If the number of diagonals in an n -sided polygon is $\frac{n(n-3)}{2}$, what is the number of diagonals in a decagon and a 25-sided polygon?

3. Can a right-angled triangle be a regular polygon? If not, then give reasons.
4. Identify the types of quadrilaterals in which the diagonals are the axes of symmetry.

Life Skills and Values

Competency Based Questions

Case-Study Based Questions

1. A community wants to extend their swimming pool to accommodate more visitors. The current pool is in cuboidal shape with length 25 metres and breadth 10 metres. The plan is to extend the length of the pool by another 10 metres.

Based on the above information, answer the following questions:

- Calculate the new area of the floor of the swimming pool after the extension.
 - How many tiles of size 50 cm by 50 cm will be required to cover the floor of the new pool?
 - What would be the increase in volume, in litres, if the depth of the pool remains 2 m after the extension? (1 cubic metre = 1000 litres)
 - What is the lateral surface area of the swimming pool?
2. Due to shortage of water in a village, the villagers decided to dig a cylindrical well. They dug out a well whose circumference is 13.2 m and depth is 10 m. (Take $\pi = \frac{22}{7}$.)

Based on the above information, answer the following questions:

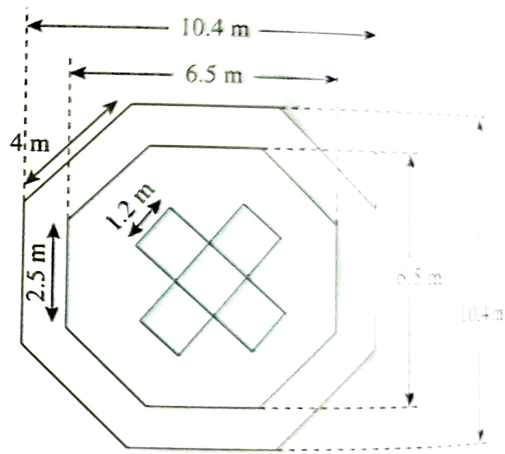
- What is the radius of the well?
- Find the volume of the well.
- If the inner wall of the well has to be plastered, find the area that needs to be plastered.
- Find the cost of plastering the inner wall of the well if the cost of plastering 1 sq. m is ₹12.

HOTS

A garden is in the shape of a regular octagon. There are four square water bodies inside the garden as shown. The squared region at the centre is to be covered with flowers.

The outermost region has 1 metre wide pavement.

- Find the area of the flower bed.
- Find the area of the pavement.
- If the cost of covering the region with flowers is ₹340 per sq. m, find the cost of making the flower bed in the central region.
- If the tiles to be used in the pavement region come in the dimension $22\text{ cm} \times 10\text{ cm}$, find the approximate number of tiles required.
- If the cost of each tile is ₹3 and the labour cost for tiling is ₹35 per sq. m, find the cost of tiling the pavement.



Competency Based Questions

Case-Study Based Questions

1. Heena is a worker in a toy factory and earned a total of ₹($12x^2 + 60x + 72$) in 1 year. She is paid ₹($x + 3$) for every toy she makes.

Based on the above information, answer the following questions:

- How many toys did she make in 1 year?
 - How many toys did she make in one month?
 - How much money did she make in 1 month?
 - Her total pay for the year is the same, but she is paid ₹($x + 2$) for every toy. How many toys did she make in 1 year?
2. Mr Sharma wants to grow tomatoes and potatoes in rectangular plots of land for his kitchen garden. He allocates $(x^2 - 13x + 40)$ m² of area for tomatoes and $(x^2 - 3x - 10)$ m² of area for potatoes. He has planned to have a flower bed between them with an area of $(4x - 20)$ m².

Based on the above information, answer the following questions:

- What can be the possible dimensions of each rectangular plot for growing tomatoes?
- What can be the possible dimensions of each rectangular plot for growing potatoes?
- What can be the possible dimensions of the rectangular flower bed?
- Create a potential layout of his kitchen garden.

HOTS

1. The area of a rectangular lawn is equal to $(x^2 + 12x + 35)$ sq. m. Find the length and breadth of the rectangular lawn. If the cost of fencing this lawn with wires is ₹3000 at the rate of ₹25 per metre, then find out the value of x and hence the actual dimension of the rectangular lawn.
2. Factorise $a(a + b)^3 - 4a^2b(a + b)$
3. If $\frac{198 \times 198 - 102 \times 102}{96} = x$, find x .
4. Ishaan is trying to factorise $15x^2 + 30x$.
Arun says the answer is $5x(3x + 6)$.
Anuj says the answer is $3x(5x + 10)$.
Who is correct? Justify your answer.