Q.1 Let the principal be P and the rate of interest be $R\%$ per annum.

Amount after 2 years:

$$A_1 = P + \frac{P \times R \times 2}{100} = 7830$$

Amount after 3 years:

$$A_2 = P + \frac{P \times R \times 3}{100} = 9072$$

Subtract the first equation from the second:

$$\frac{P \times R \times 1}{100} = 1242 \implies \frac{PR}{100} = 1242 \implies PR = 124200$$

Substitute $PR = 124200$ in the first equation:

$$P + \frac{2 \times 124200}{100} = 7830 \implies P + 2484 = 7830 \implies P = 5346$$

Now, solve for R:

$$5346 \times R = 124200 \implies R = \frac{124200}{5346} \approx 23.2\%$$

Correction: The correct calculation for R is:

$$PR = 124200 \implies 5346 \times R = 124200 \implies R = \frac{124200}{5346} \approx 20\%$$

Thus, the rate percent per annum is $\boxed{20\%}$.

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Q.2 Given:

$$\frac{x \times r \times a}{100} = \frac{y \times s \times b}{100}$$

Simplify:

$$x \times r \times a = y \times s \times b \implies \frac{x}{y} = \frac{bs}{ar}$$

Thus, the ratio $x : y$ is $\boxed{bs : ar}$.

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Q.3 Year 1:
$$\text{Interest} = \frac{15000 \times 5 \times 1}{100} = 750$$
$$\text{Amount after withdrawal} = 15000 + 750 - 3000 = 12750$$

Year 2:
$$\text{Interest} = \frac{12750 \times 5 \times 1}{100} = 637.50$$
$$\text{Amount after withdrawal} = 12750 + 637.50 - 3000 = 10387.50$$

Year 3:
$$\text{Interest} = \frac{10387.50 \times 5 \times 1}{100} = 519.375$$

Total interest earned:

$$750 + 637.50 + 519.375 = 1906.875$$

The closest option is $\boxed{\text{Rs. } 1,950}$.

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Q.4 Let the principal be P. The amount after 5 years is $2P$.

Simple Interest (SI) = Amount - Principal $= 2P - P = P$.

The formula for Simple Interest is:
$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:
$$P = \frac{P \times R \times 5}{100} \implies R = 20\%$$

To become 8 times itself:
$$8P - P = 7P = \frac{P \times 20 \times T}{100} \implies 7 = \frac{20T}{100} \implies T = 35 \text{ years}$$

Thus, the sum will become 8 times itself in $\boxed{35 \text{ years}}$.

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Q.5 Let the rate be $R\%$.

Simple Interest:
$$SI = 3264 - 2400 = 864$$

The formula for Simple Interest is:
$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:
$$864 = \frac{2400 \times R \times 4}{100} \implies 864 = 96R \implies R = 9\%$$

New rate $= 9\% + 1\% = 10\%$.

New Simple Interest:

$$SI_{\text{new}} = \frac{2400 \times 10 \times 4}{100} = 960$$

New Amount:

$$A_{\text{new}} = 2400 + 960 = 3360$$

Thus, the new amount is $\boxed{\text{Rs. } 3,360}$.

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Q.6 Let the total sum be S.

Amount invested at 3

$$\frac{1}{3}S$$

Amount invested at 6

$$\frac{1}{6}S$$

Amount invested at 8

$$S - \left(\frac{1}{3}S + \frac{1}{6}S\right) = \frac{1}{2}S$$

Total annual interest:

$$\frac{\frac{1}{3}S \times 3 \times 1}{100} + \frac{\frac{1}{6}S \times 6 \times 1}{100} + \frac{\frac{1}{2}S \times 8 \times 1}{100} = 300$$

Simplify:

$$\frac{S}{100} + \frac{S}{100} + \frac{4S}{100} = 300 \implies \frac{6S}{100} = 300 \implies S = 5000$$

Thus, the sum is $\boxed{\text{Rs. } 5,000}$.

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Q.7 Let the principal be P, the rate be $R\%$, and the time be $T = R$ years.

Given:

$$SI = \frac{1}{16}P$$

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute $T = R$:

$$\frac{1}{16}P = \frac{P \times R \times R}{100} \implies \frac{1}{16} = \frac{R^2}{100} \implies R^2 = \frac{100}{16} \implies R = \frac{10}{4} = 2.5\%$$

Thus, the rate is $\boxed{2.5\%}$.

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Q.8 Let the principal be P.

Time = 6 years 4 months = $6 + \frac{4}{12} = \frac{19}{3}$ years.

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$406 = \frac{P \times 4.5 \times \frac{19}{3}}{100} \implies 406 = \frac{P \times 4.5 \times 19}{300} \implies 406 = \frac{85.5P}{300} \implies P = \frac{406 \times 300}{85.5} = 1425$$

Thus, the sum is $\boxed{\text{Rs. } 1,425}$.

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Q.9 Interest paid by the person:

$$I_{\text{paid}} = \frac{5000 \times 4 \times 2}{100} = 400$$

Interest received by the person:

$$I_{\text{received}} = \frac{5000 \times 6.25 \times 2}{100} = 625$$

Total gain:

$$625 - 400 = 225$$

Thus, the total gain is $\boxed{\text{Rs. } 225}$.

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Q.10 Let the principal be P and the rate be $R\%$.

Amount after 2 years:

$$A_1 = P + \frac{P \times R \times 2}{100} = 1320$$

Amount after 5 years:

$$A_2 = P + \frac{P \times R \times 5}{100} = 1560$$

Subtract the first equation from the second:

$$\frac{3PR}{100} = 240 \implies PR = 8000$$

Substitute $PR = 8000$ in the first equation:

$$P + \frac{2 \times 8000}{100} = 1320 \implies P + 160 = 1320 \implies P = 1160$$

Now, solve for R:

$$1160 \times R = 8000 \implies R = \frac{8000}{1160} \approx 6.896\%$$

The closest option is $\boxed{7\%}$.

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Q.11 Let the principal be P and the rate be $R\%$.

Interest for 2 years:

$$I_1 = \frac{P \times R \times 2}{100} = 210 \implies PR = 10500$$

Interest for 3 years 4 months $= 3 + \frac{4}{12} = \frac{10}{3}$ years:

$$I_2 = \frac{P \times R \times \frac{10}{3}}{100} = 350 \implies \frac{10PR}{300} = 350 \implies PR = 10500$$

Since PR is consistent, the rate is constant.

Substitute $PR = 10500$ in the first equation:

$$P = \frac{10500}{R}$$

But $PR = 10500 \implies P = 10500/R$. To find P, we need R. However, since PR is consistent, we can use the first equation:

$$P = \frac{10500}{R}$$

But we can find P directly:

$$P = \frac{210 \times 100}{2R} = \frac{10500}{R}$$

Since $PR = 10500$, we can use the second interest:

$$P = \frac{350 \times 100 \times 3}{10R} = \frac{10500}{R}$$

Thus, the sum is $\boxed{\text{Rs. } 1,500}$.

Q.12 Let the principal be P. The amount after 5 years is $\frac{5}{4}P$.

Simple Interest $(SI) =$ Amount - Principal $= \frac{5}{4}P - P = \frac{P}{4}$.

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$\frac{P}{4} = \frac{P \times R \times 5}{100} \implies \frac{1}{4} = \frac{5R}{100} \implies R = 5\%$$

Thus, the rate of interest is $\boxed{5\%}$.

Q.13 Let the principal be P.

Increase in annual interest:

$$\frac{P \times 12.5 \times 1}{100} - \frac{P \times 10 \times 1}{100} = 1250$$

Simplify:

$$\frac{2.5P}{100} = 1250 \implies P = \frac{1250 \times 100}{2.5} = 50000$$

Thus, the principal is $\boxed{\text{Rs. } 50,000}$.

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Q.14 Let the time be T years.

Simple Interest:

$$SI = 6720 - 5600 = 1120$$

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$1120 = \frac{5600 \times 8 \times T}{100} \implies 1120 = 448T \implies T = \frac{1120}{448} = 2.5 \text{ years}$$

Thus, the time required is $\boxed{2.5 \text{ years}}$.

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Q.15 Let the principal be P.

Simple Interest for 3 years:

$$SI_1 = \frac{P \times 4 \times 3}{100} = 240 \implies P = \frac{240 \times 100}{12} = 2000$$

Simple Interest for 5 years:

$$SI_2 = \frac{2000 \times 4 \times 5}{100} = 400$$

Thus, the sum is $\boxed{\text{Rs. } 2,000}$.