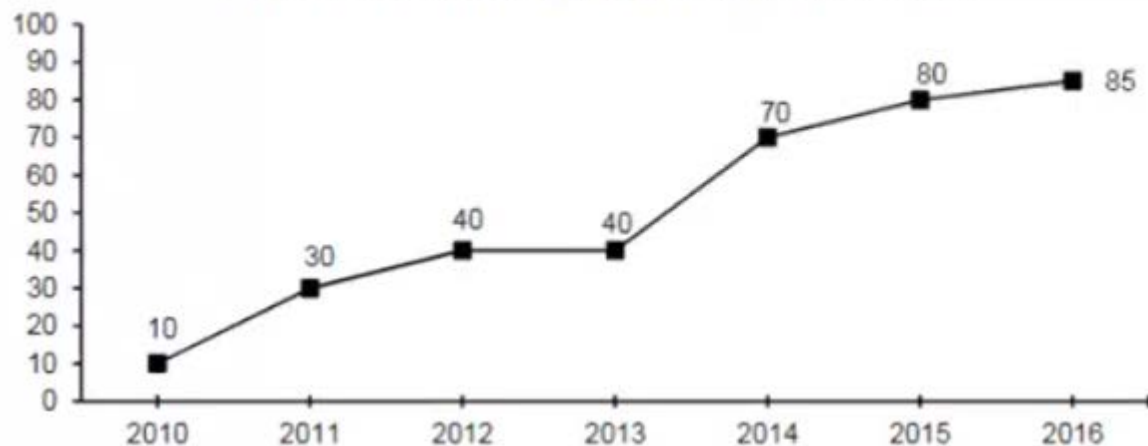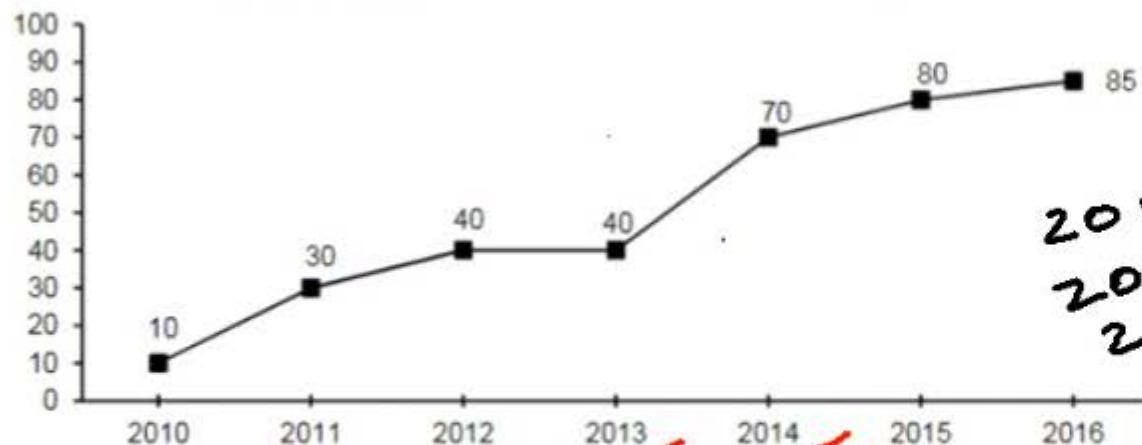## Export of steel from 2010 through 2016 (in million tonnes)

- In which year is the percentage increase in export of steel, when compared to the previous year, the highest?
  (A) 2011   (B) 2012   (C) 2013   (D) 2014

- The export of steel in 2015 is approximately how many times the exports in 2014?
  (A) 1.15   (B) 1.16   (C) 1.17   (D) 1.14

- The average export of steel for the given period is approximately how much more than the export in 2012?
  (A) 11 million tonnes   (B) 13 million tonnes
  (C) 10 million tonnes   (D) 12 million tonnes

- If the price of steel is increased by 10% from the year 2013 to 2014, the value of exports of steel in 2014 is approximately what percent of that in the year 2013?
  (A) 180%   (B) 190%
  (C) 200%   (D) 160%

- In how many years, is the export of steel in the year equal to the combined export of steel of any other two years?
  (A) 2   (B) 3   (C) 4   (D) 5

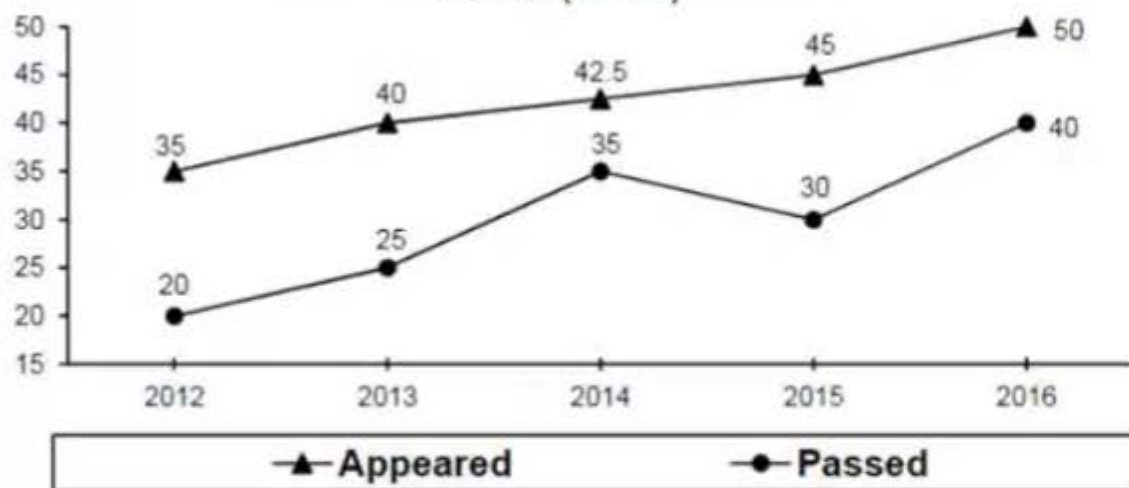**Export of steel from 2010 through 2016 (in million tonnes)**

- In which year is the percentage increase in export of steel, when compared to the previous year, the highest?
  (A) 2011   (B) 2012   (C) 2013   (D) 2014

- The export of steel in 2015 is approximately how many times the exports in 2014?
  (A) 1.15   (B) 1.16   (C) 1.17   (D) 1.14

- The average export of steel for the given period is approximately how much more than the export in 2012?
  (A) 11 million tonnes   (B) 13 million tonnes
  (C) 10 million tonnes   (D) 12 million tonnes

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- In how many years, is the export of steel in the year equal to the combined export of steel of any other two years?
  (A) 2   (B) 3   (C) 4   (D) 5

2012
2013
2014

2015   Price → 10%. ↑

2013 → 400

2014 → 770

$\dfrac{770}{400} \times 100$

$\dfrac{}{4}$

= 192%.

Number of students appeared and passed in class X from a certain district in a state (in 000)

Chart data points:
- Appeared: 2012: 35, 2013: 40, 2014: 42.5, 2015: 45, 2016: 50
- Passed: 2012: 20, 2013: 25, 2014: 35, 2015: 30, 2016: 40

Legend: ▲ Appeared   ● Passed

- In which year is the number of students failed the least?
  (A) 2016   (B) 2012   (C) 2015   (D) 2014

- For how many years is the number of students passed more than the average number of students passed for the given period?
  (A) 3   (B) 2   (C) 1   (D) 4

- If the examination fee paid by each student in 2013 is ₹16 more than that in 2012, what is the difference between the total examination fee paid by the students in 2013 and in 2012?
  (A) ₹10,000   (B) ₹80,000
  (C) ₹60,000   (D) Cannot be determined

- If in 2016, the district education authorities expected, that 75% of the students appeared will pass the class X exam, then how many more students passed the exam than the target set?
  (A) 2500   (B) 3500
  (C) 1500   (D) 4500

- If in 2015, 10% of the students who appeared, passed with at least 60% of the marks, then in 2015, how many students passed, but secured less than 60% of the marks?
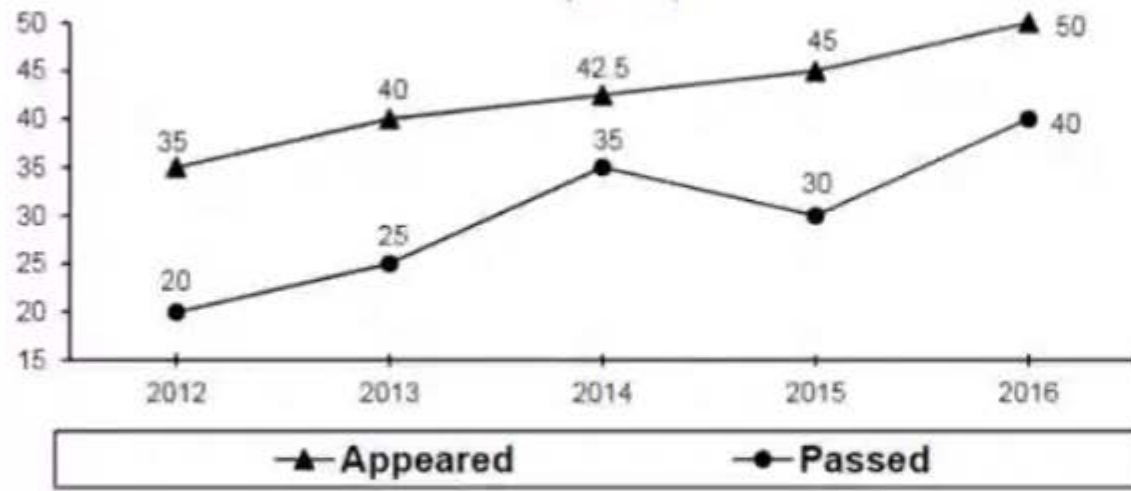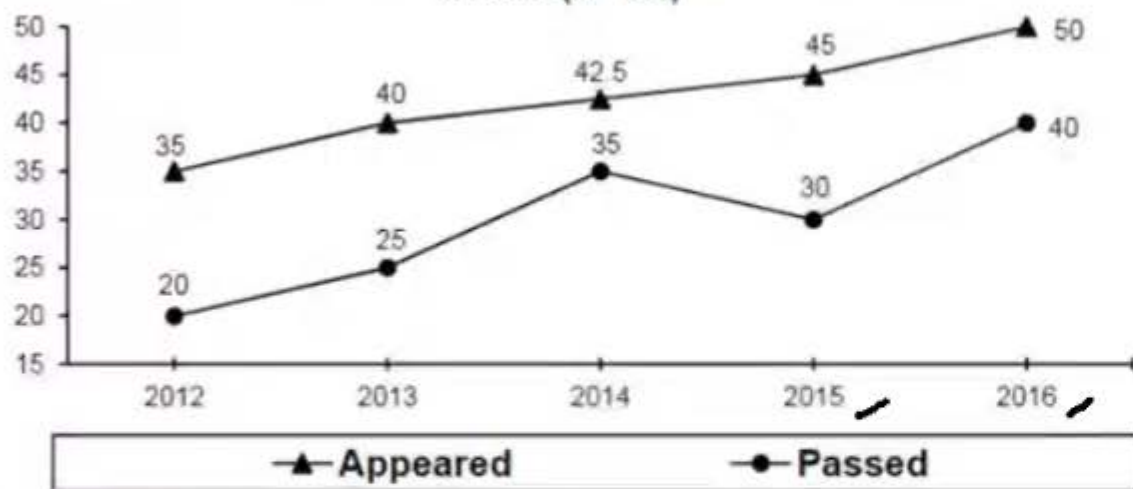 (A) 24500   (B) 22500
  (C) 27500   (D) 25500

Number of students appeared and passed in class X from a certain district in a state (in 000)

— Appeared   — Passed

- In which year is the number of students failed the least?
  (A) 2016   (B) 2012   (C) 2015 ✓   (D) 2014

- For how many years is the number of students passed more than the average number of students passed for the given period?
  (A) 3   (B) 2 ✓   (C) 1   (D) 4

- If the examination fee paid by each student in 2013 is ₹16 more than that in 2012, what is the difference between the total examination fee paid by the students in 2013 and in 2012?
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  (A) 24500   (B) 22500
  (C) 27500   (D) 25500

Handwritten notes:

2012   2013

35 ← AM → 40 35

x ← Fee → $(x+16)$

$35x$ ← Tot Fee → $40(x+16)$

$40(x+16) - 35x$

$40x + 640 - 35x$

$5x + 640$

35.16

Number of students appeared and passed in class X from a certain district in a state (in 000)

- **Appeared**   - **Passed**

- In which year is the number of students failed the least?
  (A) 2016   (B) 2012   (C) 2015   (D) 2014

- For how many years is the number of students passed more than the average number of students passed for the given period?
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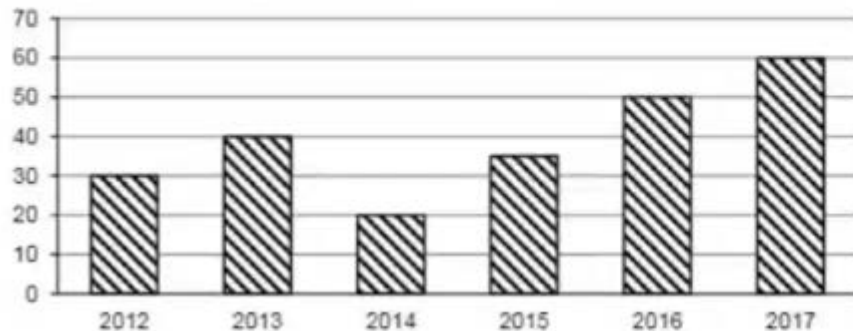 (A) 24500   (B) 22500
  (C) 27500   (D) 25500

10% of apt = 4.5
↓
passed ≥ 60%.

30 passed

< 60% = 30 − 4.5
= 25.5

25.5 × 1000
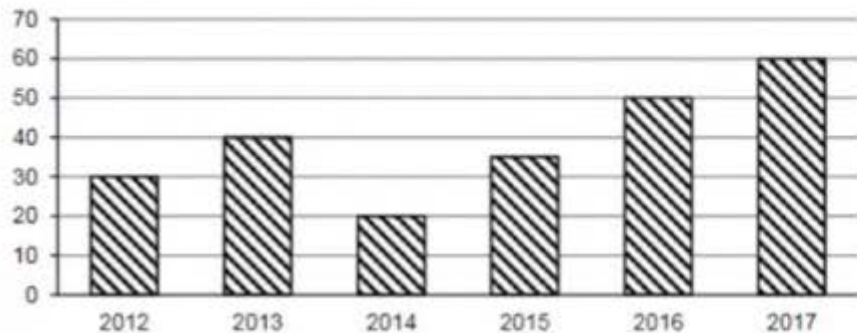= 25500

Directions for questions : The following bar graph shows the profit percent earned by a company in the years 2012 to 2017. Study the bar graph and answer the questions.

- If the income earned by the company in the year 2015 was ₹64.8 lakhs, what was the expenditure incurred by the company in the same year?
  - (A) ₹38 lakhs
  - (B) ₹48 lakhs
  - (C) ₹46 lakhs
  - (D) ₹54 lakhs

- In which year was the profit maximum?
  - (A) 2013
  - (B) 2016
  - (C) 2017
  - (D) Cannot be determined

- If the profit earned in the year 2012 was ₹14.25 lakhs, what was the income earned in the same year?
  - (A) ₹47.5 lakhs
  - (B) ₹41.75 lakhs
  - (C) ₹67.5 lakhs
  - (D) ₹61.75 lakhs

- If the expenditure incurred by the company in the years 2014 and 2016 are same, then what is the ratio of the respective incomes in those years?
  - (A) 2 : 5
  - (B) 4 : 5
  - (C) 3 : 5
  - (D) 5 : 4

- The income earned in the year 2013 is same as that earned in the year 2017. If the expenditure incurred by the company in the year 2013 is ₹32 lakhs, then what was the expenditure incurred in 2017?
  - (A) ₹28 lakhs
  - (B) ₹34 lakhs
  - (C) ₹48 lakhs
  - (D) ₹36 lakhs

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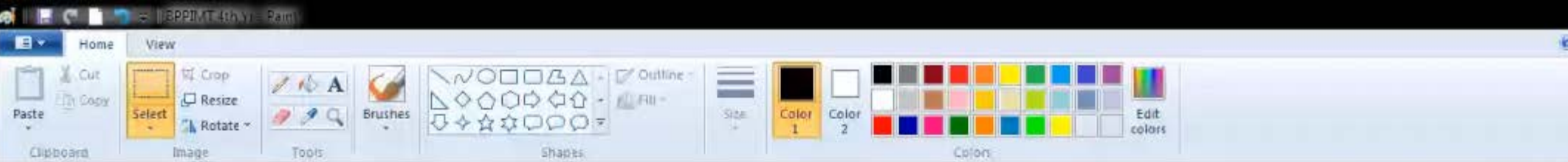 (C) ₹48 lakhs   (D) ₹36 lakhs

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2015

$P \sim \% = 35\%$
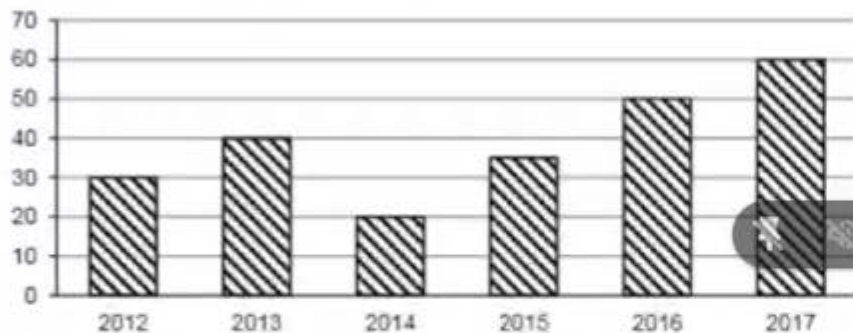
$Inc = 64.8 L$

$135\% \text{ of } Exp = 64.8 L$
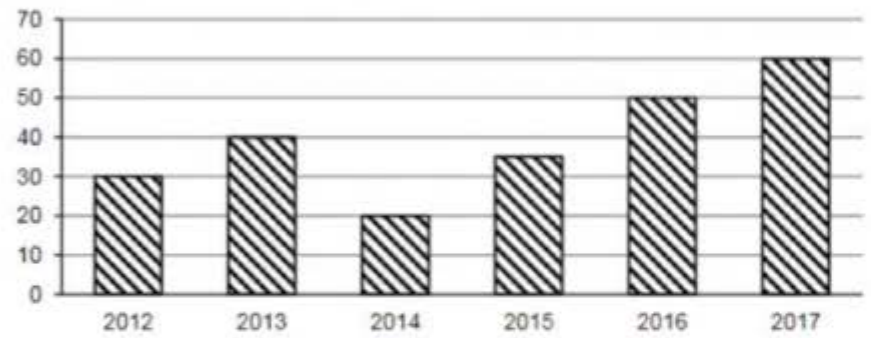
$100\% \text{ of } Exp$

$= \dfrac{64.8}{135} \times 100$

$= 48 L$

Directions for questions : The following bar graph shows the profit percent earned by a company in the years 2012 to 2017. Study the bar graph and answer the questions.

- If the income earned by the company in the year 2015 was ₹64.8 lakhs, what was the expenditure incurred by the company in the same year?
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  - (A) 2:5
  - (B) 4:5
  - (C) 3:5
  - (D) 5:4

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  - (A) ₹28 lakhs
  - (B) ₹34 lakhs
  - (C) ₹48 lakhs
  - (D) ₹36 lakhs

Handwritten work:

2012

$P_r \% = 30\%$

$P_r = 14.25 L$

30% of $E_{xp} = 14.25 L$

130% of $E_{xp} = 14.25 \frac{4.75}{\cancel{255}} \times 13\cancel{0}$

$= 61.75 L$

Directions for questions : The following bar graph shows the profit percent earned by a company in the years 2012 to 2017. Study the bar graph and answer the questions.
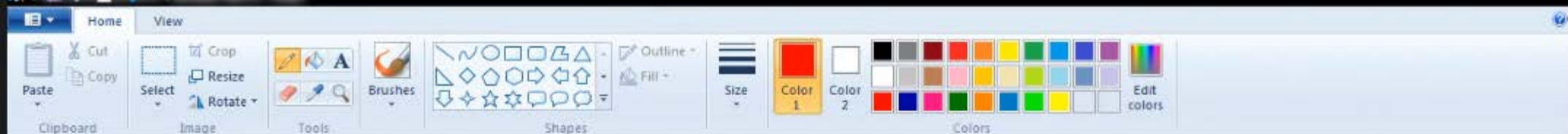

- If the income earned by the company in the year 2015 was ₹64.8 lakhs, what was the expenditure incurred by the company in the same year?
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  (C) 3 : 5   (D) 5 : 4

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  (A) ₹28 lakhs   (B) ₹34 lakhs
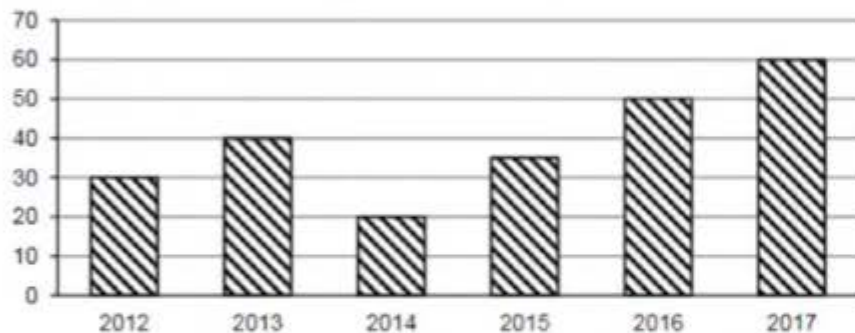 (C) ₹48 lakhs   (D) ₹36 lakhs

Handwritten notes:

$$\underline{2014} \qquad \underline{2016}$$

$$20\% = P\pi\% = 50\%$$

$$100e = Exp = 100e$$

$$\frac{4}{120\%} \text{ of } 100e = Inc = \frac{5}{150\%} \text{ of } 100e$$

$$4 : 5$$

Directions for questions : The following bar graph shows the profit percent earned by a company in the years 2012 to 2017. Study the bar graph and answer the questions.

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  - (A) ₹28 lakhs
  - (B) ₹34 lakhs
  - (C) ₹48 lakhs
  - (D) ₹36 lakhs

Handwritten notes:

$$\underline{2013} \qquad \underline{2017}$$
$$40\% = P \cdot \% = 60\%$$
$$(140\% \text{ of } 32L)) = Inc = 140\% \text{ of } 32L$$
$$32L = Exp$$

$$\underline{2017}$$
$$160\% \text{ of } Exp = 140\% \text{ of } 32L$$
$$100\% \text{ of } Exp$$
$$= \frac{140\% \text{ of } 32\overset{2}{L}}{160\%} \times 100$$
$$= 28L$$

- Let I_A be the income of A.

- Let I_B be the income of B.

2. **Express profits in terms of expenditures and profit percentages:**

   - For A: $P_A = 0.20E$

   - For B: $P_B = 0.50E$

3. **Express incomes in terms of expenditures and profits:**

   - For A: $I_A = E + P_A = E + 0.20E = 1.20E$
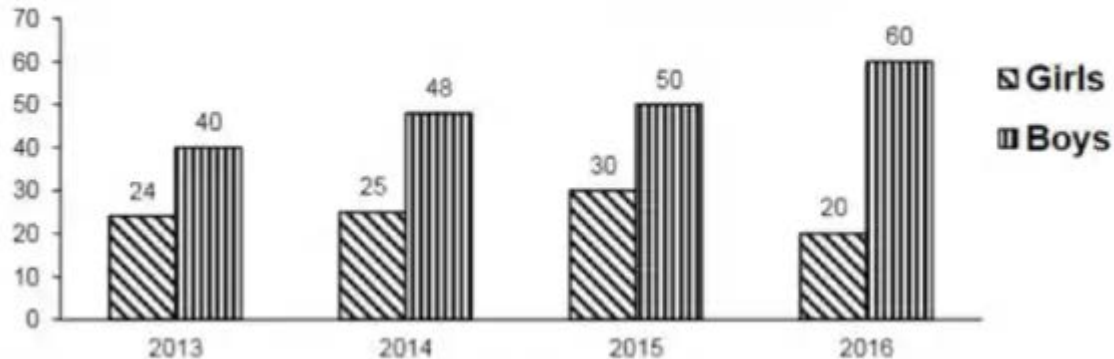
   - For B: $I_B = E + P_B = E + 0.50E = 1.50E$

4. **Find the ratio of incomes:**

$$\text{Ratio of incomes} = \frac{I_A}{I_B} = \frac{1.20E}{1.50E} = \frac{1.20}{1.50} = \frac{4}{5}$$

So, the ratio of incomes of A and B is $4 : 5$.

Directions for questions : The bar graph shows the percentage of girls and boys who passed out of total number of girls and boys appeared for the examination from 2013 to 2016 respectively. Study the graph carefully and answer these questions.

- A total of 1,800 students appeared for the exam in 2015. If the ratio of boys and girls who appeared for the exam is 3 : 1, then the percentage of students who passed the examination is
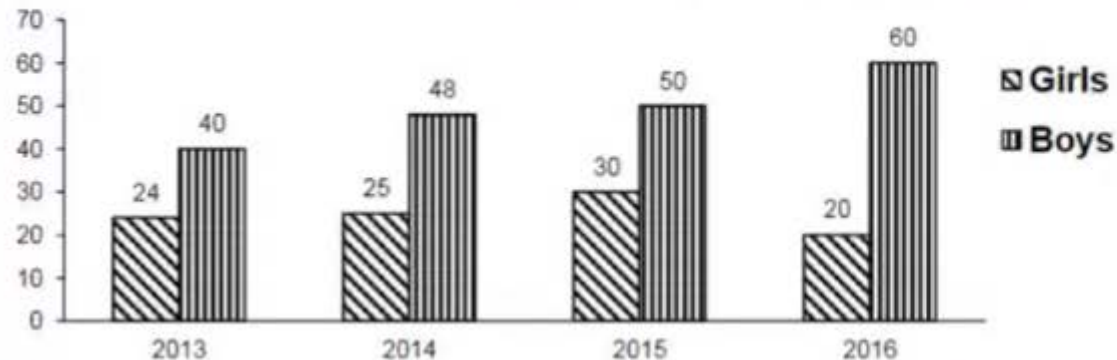(A) 35.5%   (B) 40%   (C) 45%   (D) 47%

- What is the percentage increase in the number of girls who passed the examination from 2013 to 2015 given that the total number of girls who appeared for the exam decreased from 2013 to 2015 by 10%?
(A) 12.5%   (B) 8.33%
(C) 15%   (D) Cannot be determined

- The ratio of boys and girls who appeared for the examination is 3 : 1 in 2015 and 5 : 2 in 2016. Find the percentage increase from 2015 to 2016 in the total number of students who passed.
(A) 2.1%   (B) 4.5%
(C) 6.3%   (D) Cannot be determined

- The number of boys who appeared for the exam went up by 20% from 2014 to 2016. What is the percentage increase in the number of boys who passed the exam?

- In the above problem, what is the percentage change in the number of students who failed over the same period?
(A) 2.1%   (B) 3.9%

Directions for questions : The bar graph shows the percentage of girls and boys who passed out of total number of girls and boys appeared for the examination from 2013 to 2016 respectively. Study the graph carefully and answer these questions.
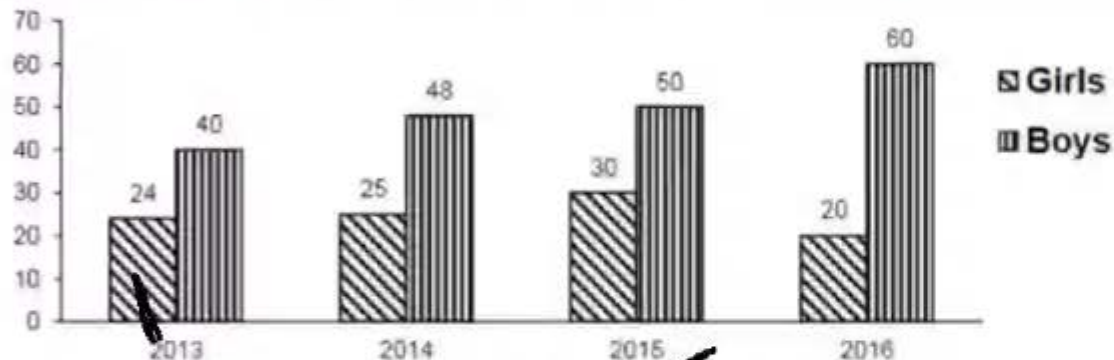

8.08

- A total of 1,800 students appeared for the exam in 2015. If the ratio of boys and girls who appeared for the exam is 3 : 1, then the percentage of students who passed the examination is
  (A) 35.5%   (B) 40%   (C) 45%   (D) 47%

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  (C) 6.3%   (D) Cannot be determined

- The number of boys who appeared for the exam went up by 20% from 2014 to 2016. What is the percentage increase in the number of boys who passed the exam?
  (A) 48%   (B) 50%
  (C) 52%   (D) Cannot be determined

- In the above problem, what is the percentage change in the number of students who failed over the same period?
  (A) 2.1%   (B) 3.9%
  (C) 4.2%   (D) Cannot be determined

Directions for questions : The bar graph shows the percentage of girls and boys who passed out of total number of girls and boys appeared for the examination from 2013 to 2016 respectively. Study the graph carefully and answer these questions.

- A total of 1,800 students appeared for the exam in 2015. If the ratio of boys and girls who appeared for the exam is 3 : 1, then the percentage of students who passed the examination is
  (A) 35.5%   (B) 40%   (C) 45%   (D) 47%

- What is the percentage increase in the number of girls who passed the examination from 2013 to 2015 given that the total number of girls who appeared for the exam decreased from 2013 to 2015 by 10%?
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  (C) 6.3%   (D) Cannot be determined

- The number of boys who appeared for the exam went up by 20% from 2014 to 2016. What is the percentage increase in the number of boys who passed the exam?
  (A) 48%   (B) 60%

- In the above problem, what is the percentage change in the number of students who failed over the same period?
  (A) 2.1%   (B) 3.9%
  (C) 4.2%   (D) Cannot be determined

Handwritten work:

$$\underline{2015} \quad \boxed{1800}$$

$$G = \frac{1}{4} \text{ of } 1800 = 450$$

$$B = \frac{3}{4} \text{ of } 1800 = 1350$$

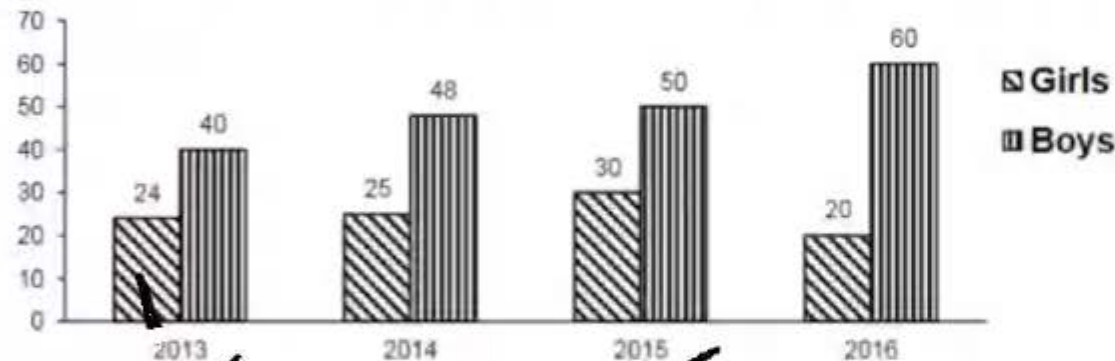$$450 \times \frac{30}{100} = 135 \ G \ \text{Passed}$$

$$+$$

$$1350 \times \frac{50}{100} = \frac{675 \ B \ \text{Passed}}{810}$$

$$\frac{810}{1800} \times 100 = 45\%$$

Directions for questions : The bar graph shows the percentage of girls and boys who passed out of total number of girls and boys appeared for the examination from 2013 to 2016 respectively. Study the graph carefully and answer these questions.

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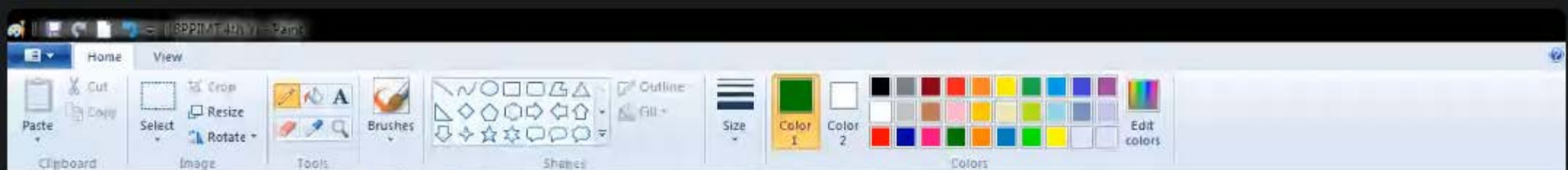
Handwritten notes:

2013
G appeared = 100 g
G passed = 24 g

$\dfrac{30g}{24g \cdot 8} \times 100 = 12.5\%$

2015
G appeared = 90 g
G passed = 27 g

- A total of 1,800 students appeared for the exam in 2015. If the ratio of boys and girls who appeared for the exam is 3 : 1, then the percentage of students who passed the examination is
  (A) 35.5%   (B) 40%   (C) 45%   (D) 47%

- What is the percentage increase in the number of girls who passed the examination from 2013 to 2015 given that the total number of girls who appeared for the exam decreased from 2013 to 2015 by 10%?
  (A) 12.5%   (B) 8.33%
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  (A) 2.1%   (B) 4.5%
  (C) 6.3%   (D) Cannot be determined

- In the above problem, what is the percentage change in the number of students who failed over the same period?
  (A) 2.1%   (B) 3.9%
  (C) 4.2%   (D) Cannot be determined

Handwritten notes:

$$2014$$
$$B \text{ appeared} = 100b$$
$$B \text{ passed} = \frac{48}{100} \times 100b$$
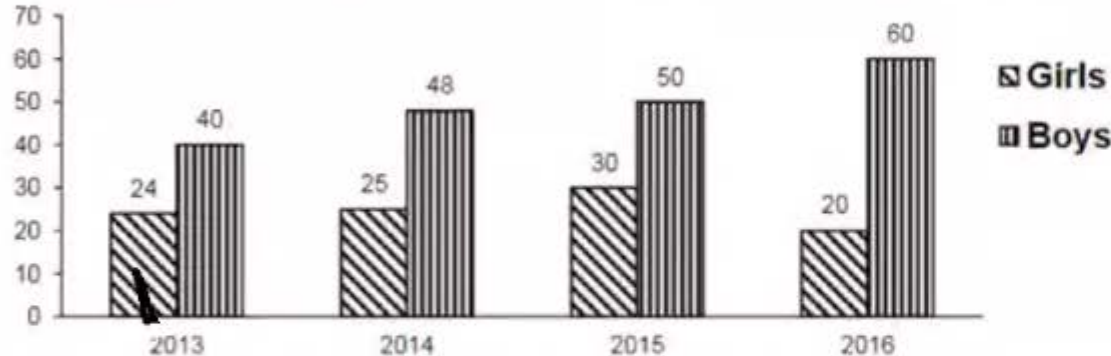$$= 48b$$

$$2016$$
$$\frac{72b - 48b}{48b} \times 100$$
$$B \text{ appeared} = 120b$$
$$B \text{ passed} = \frac{60}{100} \times 120b$$
$$= \frac{24b}{48b_2} \times 100 = 72b$$
$$= 50\%$$

Directions for questions : The bar graph shows the percentage of girls and boys who passed out of total number [of girl]s and boys appeared for the examination from 2013 to 2016 respectively. Study the graph carefully and answer these [quest]ions.

A total of 1,800 students appeared for the exam in 2015. If the ratio of boys and girls who appeared for the exam is 3 : 1, then the percentage of students who passed the examination is
(A) 35.5%   (B) 40%   (C) 45%   (D) 47%

What is the percentage increase in the number of girls who passed the examination from 2013 to 2015 given that the total number of girls who appeared for the exam decreased from 2013 to 2015 by 10%?
(A) 12.5%   (B) 8.33%
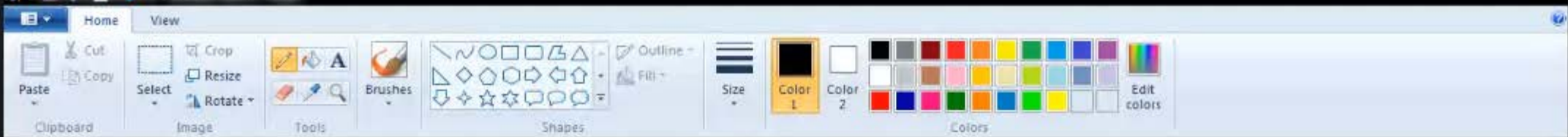(C) 15%   (D) Cannot be determined

● The ratio of boys and girls who appeared for the examination is 3 : 1 in 2015 and 5 : 2 in 2016. Find the percentage increase from 2015 to 2016 in the total number of students who passed.
(A) 2.1%   (B) 4.5%
(C) 6.3%   (D) Cannot be determined

The number of boys who appeared for the exam went up by 20% from 2014 to 2016. What is the percentage increase in the number of boys who passed the exam?
(A) 48%   (B) 50%

● In the above problem, what is the percentage change in the number of students who failed over the same period?
(A) 2.1%   (B) 3.9%
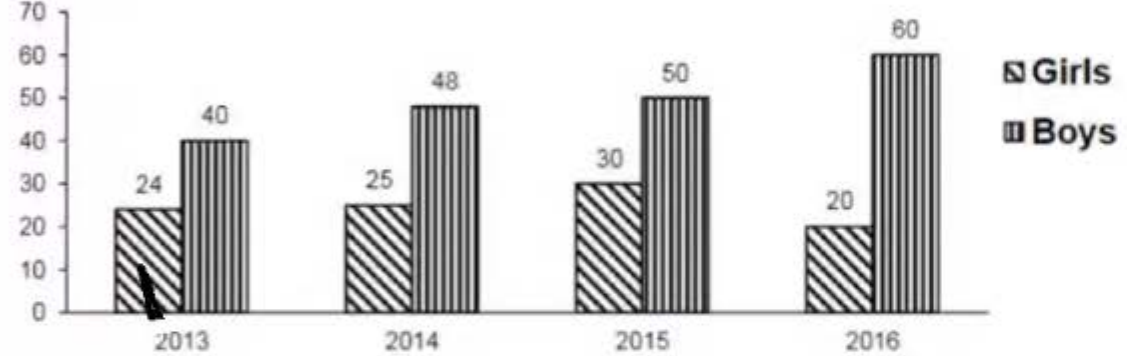(C) 4.2%   (D) Cannot be determined

Directions for questions : The bar graph shows the percentage of girls and boys who passed out of total number [girl]s and boys appeared for the examination from 2013 to 2016 respectively. Study the graph carefully and answer these [ques]tions.

A total of 1,800 students appeared for the exam in 2015. If the ratio of boys and girls who appeared for the exam is 3 : 1, then the percentage of students who passed the examination is

(A) 35.5% (B) 40% (C) 45% (D) 47%

What is the percentage increase in the number of girls who passed the examination from 2013 to 2015 given that the total number of girls who appeared for the exam decreased from 2013 to 2015 by 10%?
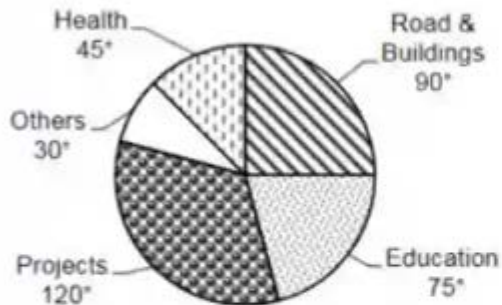
(A) 12.5% (B) 8.33%
(C) 15% (D) Cannot be determined

● The ratio of boys and girls who appeared for the examination is 3 : 1 in 2015 and 5 : 2 in 2016. Find the percentage increase from 2015 to 2016 in the total number of students who passed.

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(C) 4.2% (D) Cannot be determined

Directions for questions : The following pie chart shows the municipal funds that were spent under different heads in a year. Study the chart carefully and answer the questions.

Health 45°

Road & Buildings 90°

Others 30°

Projects 120°

Education 75°

- The expenditure on Roads & Buildings is what percent of the expenditure on projects?

    (A) $66\frac{2}{3}$% (B) 50%   (C) 75%   (D) 80%

- If the expenditure towards health is ₹28.8 crores, what is the expenditure towards education?
    (A) ₹36 crores   (B) ₹48 crores
    (C) ₹42 crores   (D) ₹36.4 crores

- If the expenditure towards education increases by 20%, by what percent should the expenditure on 'Others' decrease so that the total expenditure remains same?

    (A) 50%   (B) $33\frac{1}{3}$% (C) 25%   (D) 20%

- If 10% of the expenditure towards projects is ₹45 crores, what is the total expenditure on all the heads together?
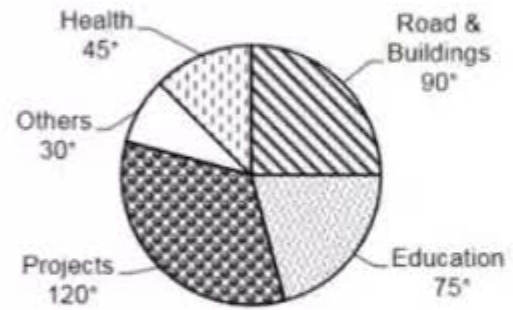   (A) ₹750 crores   (B) ₹900 crores
    (C) ₹1,050 crores   (D) ₹1,350 crores

- By what percent is the expenditure towards Roads & Buildings and Health together more than that towards education?
    (A) 60%   (B) 80%   (C) 40%   (D) 120%

$$E_{educ} = 75°$$

$$I_{inc} = 75° \times \frac{1}{5} = 15° \uparrow$$

$$30° - 15° = 15°$$

$$\frac{30° - 15°}{30°} \times 100$$
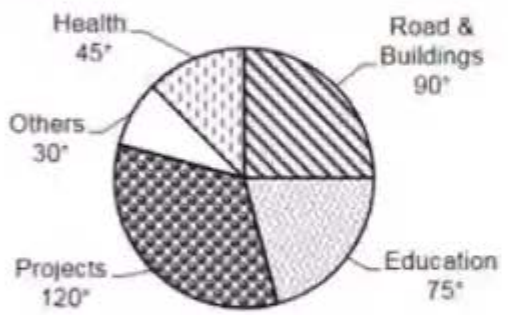
$$= \frac{15°}{30°} \times 100$$

$$= 50\%$$

Directions for questions : The following pie chart shows the municipal funds that were spent under different heads in a year. Study the chart carefully and answer the questions

- The expenditure on Roads & Buildings is what percent of the expenditure on projects?

  (A) $66\frac{2}{3}$% (B) 50% ✓(C) 75% (D) 80%

- If the expenditure towards health is ₹28.8 crores, what is the expenditure towards education?

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- If the expenditure towards health is ₹28.8 crores, what is the expenditure towards education?
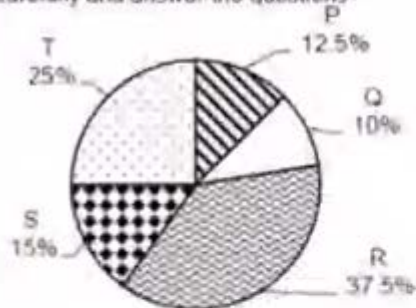(A) ₹36 crores (B) ₹48 crores
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- By what percent is the expenditure towards Roads & Buildings and Health together more than that towards education?
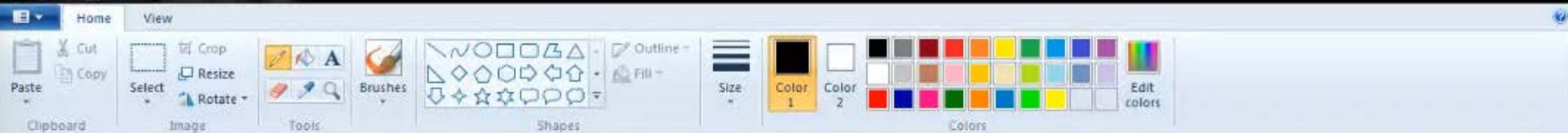(A) 60% (B) 80% (C) 40% (D) 120%

R&B + Health = $90° + 45° = 135°$

Educ = $75°$

∴ $\dfrac{135° - 75°}{75°} \times 100 = \dfrac{60}{75} \times 100 = 80\%$

Directions for questions : Study the following pie chart carefully and answer the questions.
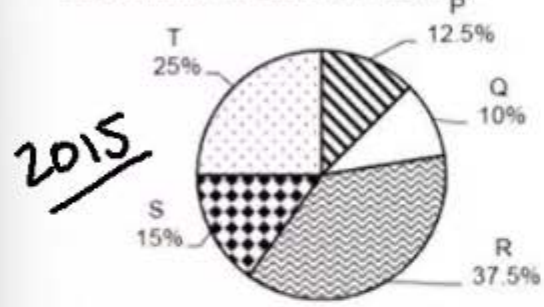

P 12.5%
T 25%
Q 10%
S 15%
R 37.5%

The above diagram shows the break up of revenue from various outlets P, Q, R, S and T of a company in the total revenue of ₹1,800 lakhs in 2015

• What is the difference between the revenue from outlets P and R? (in ₹ lakhs)
(A) 325   (B) 375   (C) 400   (D) 425

• In 2016, the amount of revenue from Q decreases by 20% and that from S increases by 20% when compared to that in 2015. What is the difference in the revenues from Q and that of S in 2016?
(A) ₹120 lakhs   (B) ₹160 lakhs
(C) ₹150 lakhs   (D) None of these

• If the profit earned by the company from outlet R is equal to 40% of its revenue, then what is profit earned by the company from outlet R?
(A) ₹240 lakhs   (B) ₹150 lakhs
(C) ₹180 lakhs   (D) ₹210 lakhs

• What is the angle made by the sector representing 3the revenue from outlet P?
(A) 42°   (B) 43.2°   (C) 45°   (D) 46.8°

• If the total revenue of the company in the year 2016 was ₹2,000 lakhs with the percentage contribution of each outlet remaining the same, find the difference in the revenue obtained from outlet Q in the years 2015 and 2016. (in lakhs ₹)
(A) 32   (B) 64   (C) 48   (D) 40

Directions for questions : Study the following pie chart carefully and answer the questions.

The above diagram shows the break up of revenue from various outlets P, Q, R, S and T of a company in the total revenue of ₹1,600 lakhs in 2015.

- What is the difference between the revenue from outlets P and R? (in ₹ lakhs)
  (A) 325   (B) 375   (C) 400   (D) 425

- In 2016, the amount of revenue from Q decreases by 20% and that from S increases by 20% when compared to that in 2015. What is the difference in the revenues from Q and that of S in 2016?
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- If the profit earned by the company from outlet R is equal to 40% of its revenue, then what is profit earned by the company from outlet R?
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  (C) ₹180 lakhs   (D) ₹210 lakhs

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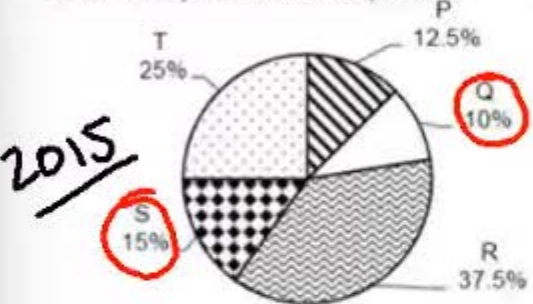 (A) 32   (B) 64   (C) 48   (D) 40

2016

$Q \rightarrow \frac{4}{5}$ of 10% = 8%

$S \rightarrow \frac{6}{5}$ of 15% = 18%

Diff = 10%

10% of 1600 L

$= \frac{10}{100} \times 1600$

$= 160 L$

Directions for questions : Study the following pie chart carefully and answer the questions.

2015

The above diagram shows the break up of revenue from various outlets P, Q, R, S and T of a company in the total revenue of ₹1,600 lakhs in 2015.

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  (A) 32   (B) 64   (C) 48   (D) 40

$$\frac{40}{100} \times 37.5\% \text{ of } 1600 L$$

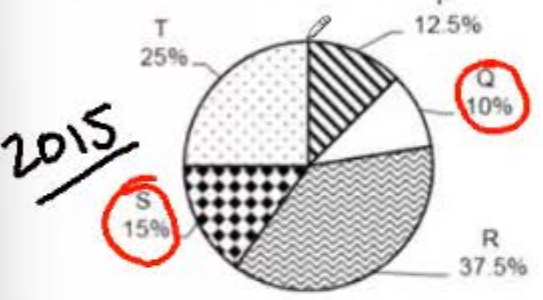$$\frac{40}{100} \times \frac{37.5}{100} \times 1600$$

$$3.75 \times 64$$

$$= \quad 192 + 48$$

$$\frac{132}{4} \rightarrow 48.00$$

$$2 \times 192$$
$$25 \times 3 \times 64$$
$$75 \times 64$$

$$= 240 L$$

Directions for questions : Study the following pie chart carefully and answer the questions.

2015

The above diagram shows the break up of revenue from various outlets P, Q, R, S and T of a company in the total revenue of ₹1,600 lakhs in 2015.

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  (C) ₹180 lakhs   (D) ₹210 lakhs

- What is the angle made by the sector representing the revenue from outlet P?
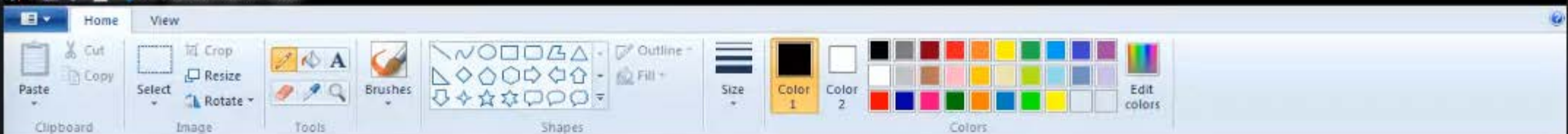 (A) 42°   (B) 43.2°   (C) 45°   (D) 46.8°

- If the total revenue of the company in the year 2016 was ₹2,000 lakhs with the percentage contribution of each outlet remaining the same, find the difference in the revenue obtained from outlet Q in the years 2015 and 2016. (in lakhs ₹)
  (A) 32   (B) 64   (C) 48   (D) 40

$$100\% = 360°$$
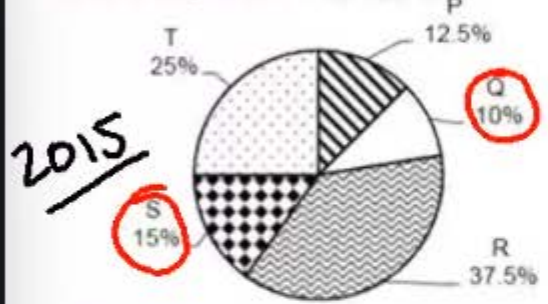
$$12.5\% = \frac{360}{100} \times 12.5$$

$$= 360 \times \frac{45}{8}$$

$$= 45°$$

Directions for questions : Study the following pie chart carefully and answer the questions.

The above diagram shows the break up of revenue from various outlets P, Q, R, S and T of a company in the total revenue of ₹1,600 lakhs in 2015.

- What is the difference between the revenue from outlets P and R? (in ₹ lakhs)
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- What is the angle made by the sector representing the revenue from outlet P?
  (A) 42°   (B) 43.2°   (C) 45°   (D) 46.8°

- If the total revenue of the company in the year 2016 was ₹2,000 lakhs with the percentage contribution of each outlet remaining the same, find the difference in the revenue obtained from outlet Q in the years 2015 and 2016. (in lakhs ₹)
  (A) 32   (B) 64   (C) 48   (D) 40

$\dfrac{40}{100} \text{ of } 1600 \times \dfrac{28}{100}$

$= 40\%$

$\dfrac{400}{1600} \times \dfrac{25}{100} = 25\%$