- The number of chocolates with Seoni is 7/9th of the number of chocolates with Varsha. If Varsha has 14 chocolates more than Seoni, then find the total number of chocolates with them.

  (A) 48   (B) 80
  (C) 96   (D) 112

- The age of a woman is thrice that of her daughter. When the woman was 29 years old, her only son, who is three years younger to her only daughter, was born. What is the present age of her son?

  (A) 8 years   (B) 9 years
  (C) 10 years   (D) 11 years

- Find the smaller of two numbers whose sum is 250 and whose difference of squares is 9000.

  (A) 109   (B) 141
  (C) 107   (D) 100

- The difference between a three-digit number and the number formed by reversing its digits is 396. The difference of the hundreds and the units digits is one less than the sum of the units and the tens digits. Also, the hundreds digit is twice the units digit. Find the number.

  (A) 418   (B) 412
  (C) 612   (D) 814

- The number of chocolates with Seoni is $7/9^{th}$ of the number of chocolates with Varsha. If Varsha has 14 chocolates more than Seoni, then find the total number of chocolates with them.
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$$\frac{V \qquad S}{1 \quad \sim \quad \frac{7}{9}}$$

$$= \frac{2}{9} \text{ of T.C.} = 14$$

$$1 + \frac{7}{9} = \frac{16}{9}$$

$$\frac{16}{9} \text{ of T.C.} = 14 \times 8$$

$$= 112$$

- The number of chocolates with Seoni is $7/9^{th}$ of the number of chocolates with Varsha. If Varsha has 14 chocolates more than Seoni, then find the total number of chocolates with them.
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	W	D	S
Past	29	3	0
Pres	$3x$	$x13$	10

$13-3$
$= 10 \text{ yrs Pres}$

$3x - x = 29 - 3$
$2x = 26$
$x = 13$

2 Dig

$$\text{Orig} \Rightarrow \frac{T\ U}{x\ y} \longrightarrow \text{No} :- 10x + y$$

$$\text{Reve} \Rightarrow y\ x \longrightarrow \text{ReeNo} :- 10y + x$$

A) Add teative :-

$$\begin{array}{r} 10x + y \\ 10y + x \\ \hline 11x + 11y \end{array}$$

$$= 11(x + y)$$

① Orig + Rev :- Result is always a multiple of 11.

② $\dfrac{\text{Result}}{11}$ (@) = $\sum$ of the 2 digits

B) Orig − Rev :-

$$\begin{array}{r} 10x + y \\ 10y + x \\ \hline 9x - 9y \end{array}$$

$$= 9(x - y)$$

① (Orig − Rev) the result is a multiple of 9

② $\dfrac{\text{Result}}{9}$ (@) = $(T - U)$

$$\underline{\text{add the two}:-}$$

$$\frac{\begin{array}{c}10x+y\\10y+x\end{array}}{11x+11y}$$

$$= 11(x+y)$$

Orig + Rev :- Result is always a multiple of 11.

(2) $\dfrac{\text{Result}}{11}$ (a) $= \sum$ of the 2 digits

B) $\dfrac{\text{Orig} - \text{Rev}}{\begin{array}{c}10x+y\\ -10y+x\end{array}}$:-

$$9x - 9y$$
$$= 9(x-y)$$

① (Orig - Rev) the result is a multiple of 9

② $\dfrac{\text{Result}}{9}$ (a)
$$= (T - U)$$

3 Dig

$$
\begin{array}{cccc}
 & H & T & U \\
\text{Orig}:- & x & y & z \rightarrow \text{Orig No} \rightarrow 100x + 10y + z \\
\text{Rev}:- & z & y & x \rightarrow \text{Rev No} \rightarrow 100z + 10y + x
\end{array}
$$

A) Orig + Rev :-

$$
\begin{array}{r}
100x + 10y + z \\
100z + 10y + x \\
\hline
101x + 20y + 101z
\end{array}
$$

$\times$

B) Orig - Rev :-

$$
\begin{array}{r}
100x + 10y + z \\
-100z + 10y + x \\
\hline
99x - 99z
\end{array}
$$

$$= 99(x - z)$$

① Orig - Rev :-

Result is a multiple of 99

② $\dfrac{\text{Result}}{99}$ (a)

$= (H - U)$

- The number of chocolates with Seoni is 7/9th of the number of chocolates with Varsha. If Varsha has 14 chocolates more than Seoni, then find the total number of chocolates with them.
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  (A) 418   (B) 412
  (C) 612   (D) 814

$$\frac{396}{99}(\text{@}) = 4$$

$$\boxed{H - U = 4} \checkmark$$

$$\text{digits} = \boxed{0 \sim 9}$$

$$4 = (4 + T) - 1$$

H $\checkmark$	T	U $\checkmark$
4		0 $\times$
5		1 $\times$
6		2 $\times$
7		3 $\times$
8	1	4 $\checkmark$
9		5 $\times$

$$4 = (4 + T) - 1$$
$$\text{or, } 4 + T = 5$$
$$T = 1$$

- The cost of three pencils, five rulers and seven erasers is ₹49. The cost of five pencils, eight rulers and eleven erasers is ₹78. Find the cost of one pencil, one ruler and one eraser.
  (A) ₹8 (B) ₹9
  (C) ₹7 (D) Cannot be determined

- The cost of three apples, two mangoes and four oranges is ₹43. The cost of five apples, three mangoes and six oranges is ₹66. Find the cost of each apple.
  (A) ₹5 (B) ₹6
  (C) ₹3 (D) Cannot be determined

- The cost of three pens, five pencils and two books is ₹68. The cost of six pens, seven pencils and four books is ₹121. The cost of nine pens, fifteen pencils and six books is ₹204. Find the cost of each book.
  (A) ₹7 (B) ₹11
  (C) ₹5 (D) Cannot be determined

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  - (A) ₹7
  - (B) ₹11
  - (C) ₹5
  - (D) Cannot be determined

- In the year 1980, the age, in years, of a person was one-eightyninth of his year of birth. What was the age (in years) of the person in 2012?
  - (A) 48
  - (B) 58
  - (C) 74
  - (D) 54

- Five years ago, a man was five times as old as his son. Two years hence, the man will be three times as old as his son. What is the present age of the man? (in years)

  (A) 50 years   (B) 35 years
  (C) 42 years   (D) 40 years

- A test has 175 questions. A candidate gets 4 marks for each correct answer and loses 2 marks for each wrong answer and loses 1 mark for each unanswered question. A student scored 405. On analysing his performance he concluded that he had not attempted 35 questions. How many questions did he answer wrongly?

  (A) 30   (B) 25
  (C) 20   (D) Cannot be determined

- In an examination $3/5^{th}$ of the students who appeared failed by 10 marks and $1/5^{th}$ of the students got 10 marks above the pass mark. Each of the remaining students got 20 marks above the pass mark. Students who took the exam scored 62 marks on an average. The pass mark is _____.

  (A) 64   (B) 66
  (C) 62   (D) 56

- A man had enough money to purchase 16 apples or 10 mangoes. If the man buys four apples and five mangoes and is left with ₹20, then what is the difference in the prices of an apple and a mango?
  (A) ₹2
  (B) ₹3
  (C) ₹4
  (D) ₹6

- Dheeraj has twice as many sisters as he has brothers. If Deepa, Dheeraj's sister has the same number of brothers as she has sisters, then Deepa has how many brothers?
  (A) 2
  (B) 3
  (C) 4
  (D) 6

- Ninety is divided into three different parts such that the sum of the first two parts exceeds the sum of the second and the third parts by 18. If the smallest part is 18, then the greatest part is _____
  (A) 45
  (B) 54
  (C) 63
  (D) Cannot be determined

- Solve : $5(x + 5) + 6 (y - 3) = -4$
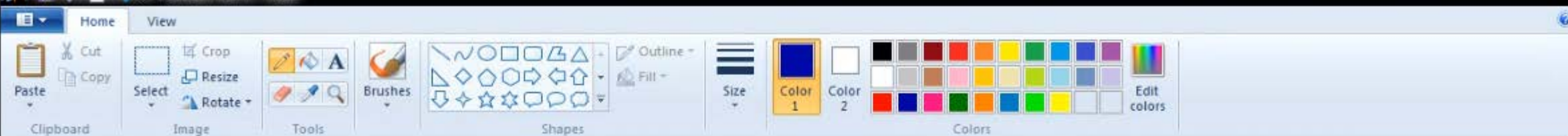 $9 (x - 1) + 4 (y - 2) = 4$
  (A) $x = 10, y = -9$
  (B) $x = 9, y = -10$
  (C) $x = 5, y = -6$
  (D) $x = 6, y = -5$

- A, B and C each had some amount of money. A doubled the amounts with the others. B then doubled the amounts with the others. C then doubled the amounts with the others. At this stage, each of them had ₹120. Find the initial amount with B.

- There are seven children standing in a line, not all of whom have the same number of cakes with them. If the first child distributes his cakes among the remaining six children such that he doubles their respective number of cakes, then he will be left with four cakes. Instead, if the second child takes away two cakes from each of the remaining six children, then he will be left with three less than the number of cakes that the first child initially had. What is the total number of cakes with the third child, the fourth child, ..., the seventh child?
  (A) 11
  (B) 14
  (C) 12
  (D) 15

- Anand had a certain number of chocolates with him. He distributed these chocolates among his three friends – A, B and C. To A, he gave half of the total number of chocolates, with him and five more. To B, he gave one-third of the remaining chocolates with him and four more. To C, he gave one-fourth of the remaining chocolates with him and three more. Finally he is left with 15 chocolates. Find the initial number of chocolates with Anand.

- The cost of three pencils, five rulers and seven erasers is ₹49. The cost of five pencils, eight rulers and eleven erasers is ₹78. Find the cost of one pencil, one ruler and one eraser.
  (A) ₹8
  (B) ₹9
  (C) ₹7
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- The cost of three apples, two mangoes and four oranges is ₹43. The cost of five apples, three mangoes and six oranges is ₹66. Find the cost of each apple.
  (A) ₹5
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  (C) ₹3
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- The cost of three pens, five pencils and two books is ₹68. The cost of six pens, seven pencils and four books is ₹121. The cost of nine pens, fifteen pencils and six books is ₹204. Find the cost of each book.
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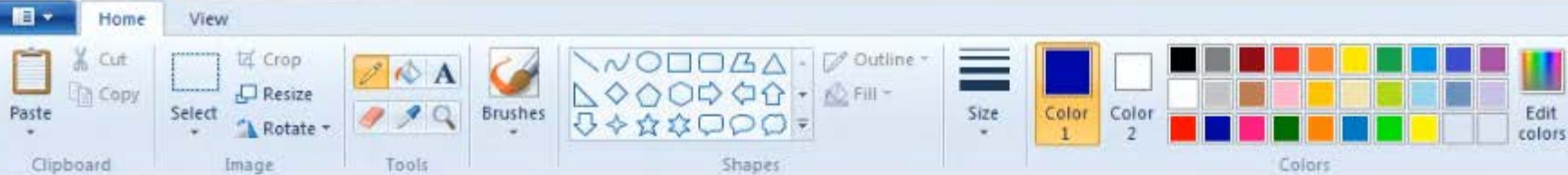 (A) 48
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×3 $3P + 5R + 7E = 49$

×2 $5P + 8R + 11E = 78$

$9P + 15R + 21E = 147$

$10P + 16R + 22E = 156$

$1P + 1R + 1E = 39$ ✓

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  - (A) 48
  - (B) 58
  - (C) 74
  - (D) 54

Handwritten solution:

(A)

$\times 3$ $\quad 3A + 2M + 4\theta = 43$

$\times 2$ $\quad 5A + 3M + 6\theta = 66$

$9A + 6M + 12\theta = 129 \times 3$
$10A + 6M + 12\theta = 132 \times 2$
_____
$1A = ₹3$

$\dfrac{M}{2/3} = \dfrac{\theta}{2/3}$

- The cost of three pencils, five rulers and seven erasers is ₹49. The cost of five pencils, eight rulers and eleven erasers is ₹78. Find the cost of one pencil, one ruler and one eraser.
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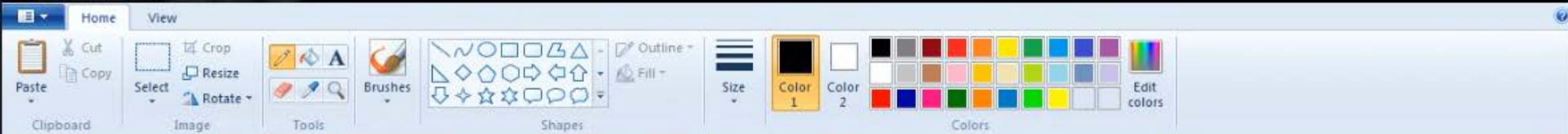 - (A) 48
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(1 B)

$$3P + 5\cancel{r} + 2B = 68$$

$$6P + 7\cancel{r} + 4B = 121$$

$$\cancel{9P + 15r + 6B = 204}$$

$$9P + 15\cancel{r} + 6B = 204$$

$$\frac{P}{1\frac{3}{2}} \neq \frac{\cancel{r}}{\frac{5}{7}}$$

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Age in $1980 = x$

$D \text{ of } B = (1980 - x)$

$$x = \frac{1}{89}(1980 - x)$$

22

$\begin{array}{l} + \, (2012 \\ \quad -1980) \end{array}$ $89x = 1980 - x$

$90x = 1980$

$= 22 + 32$ $x = 22$

$= 54$

- Five years ago, a man was five times as old as his son. Two years hence, the man will be three times as old as his son. What is the present age of the man? (in years)
  - (A) 50 years
  - (B) 35 years
  - (C) 42 years
  - (D) 40 years

- A test has 175 questions. A candidate gets 4 marks for each correct answer and loses 2 marks for each wrong answer and loses 1 mark for each unanswered question. A student scored 405. On analysing his performance he concluded that he had not attempted 35 questions. How many questions did he answer wrongly?
  - (A) 30
  - (B) 25
  - (C) 20
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- In an examination 3/5th of the students who appeared failed by 10 marks and 1/5th of the students got 10 marks above the pass mark. Each of the remaining students got 20 marks above the pass mark. Students who took the exam scored 62 marks on an average. The pass mark is _____.
  - (A) 64
  - (B) 66
  - (C) 62
  - (D) 56

Handwritten work:

$$M \qquad\qquad S$$

5 yrs ago $\qquad 5x \overset{35}{\qquad} \qquad x \overset{7}{\qquad}$

Present

2 yrs hence $\qquad 5x+7 = 3(x+7)$

$$35+5 = 40$$

$$5x+7 = 3x+21$$

$$2x = 14$$

$$x = 7$$

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$175\ Q$

$\underline{35\ UA}$

$Marks = 405$

$C \rightarrow +4$
$W \rightarrow -2$
$UA \rightarrow -1$

$C\ W$

① $Att = \dfrac{175-35}{=140\ Q}$

$Marks = 440$

② $140 \times 4 = 560\ marks$

Why? $\rightarrow$ ∵ Wrong

$560 - 440 = 120\ marks$

$\dfrac{120}{6} = 20W$

Per Wrong Q
$\underline{}$
$-4 - 2 = \boxed{-6}$

- Five years ago, a man was five times as old as his son. Two years hence, the man will be three times as old as his son. What is the present age of the man? (in years)

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  (B) 66
  (C) 62
  (D) 56

Handwritten work:

175 Q

$C \to +4$
$W \to -2$
$UA \to -1$

35 UA

Marks = 405

① Att = 175 − 35 = 140 Q

$\frac{C}{W}$

405 + 35 = 440

Marks = 440 − 35

② 140 × 4 = 560 marks

Why? → ∵ Wrong

560 − 440 = 120 marks

Per Wrong Q

−4 −2 = −6

$Q = \dfrac{120}{6} = 20\,W$

- Five years ago, a man was five times as old as his son. Two years hence, the man will be three times as old as his son. What is the present age of the man? (in years)
  - (A) 50 years
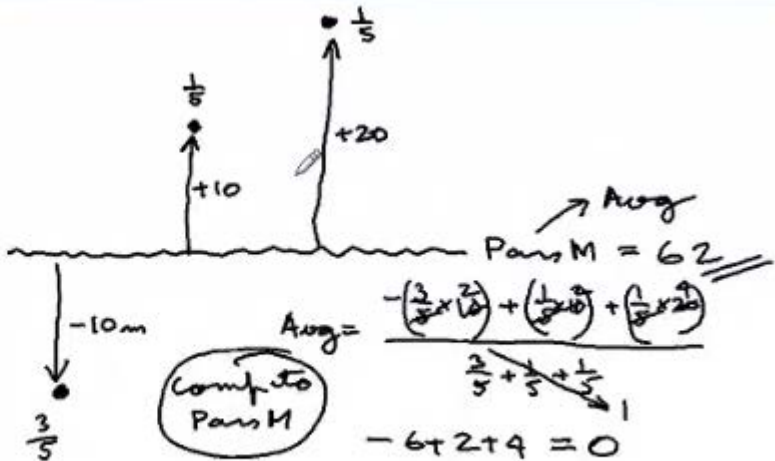 - (B) 35 years
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  - (C) 20
  - (D) Cannot be determined

- In an examination $3/5^{th}$ of the students who appeared failed by 10 marks and $1/5^{th}$ of the students got 10 marks above the pass mark. Each of the remaining students got 20 marks above the pass mark. Students who took the exam scored 62 marks on an average. The pass mark is _____
  - (A) 64
  - (B) 66
  - (C) 62
  - (D) 56

$$1 - \left(\tfrac{3}{5} + \tfrac{1}{5}\right) = \tfrac{1}{5}$$

$$\frac{1}{5} \qquad \frac{1}{5}$$

$$+10 \qquad +20$$

Avg

$$Pass\,M = 62$$

$$-10\,m$$

$$\frac{3}{5}$$

Compute Pass M

$$Avg = \frac{-\left(\frac{3}{5} \times \cancel{10}^{2}\right) + \left(\frac{1}{5} \times \cancel{10}^{2}\right) + \left(\frac{1}{5} \times \cancel{20}^{4}\right)}{\frac{3}{5} + \frac{1}{5} + \frac{1}{5}} \,1$$

$$-6 + 2 + 4 = 0$$

- A man had enough money to purchase 16 apples or 10 mangoes. If the man buys four apples and five mangoes and is left with ₹20, then what is the difference in the prices of an apple and a mango?
  - (A) ₹2
  - (B) ₹3
  - (C) ₹4
  - (D) ₹6

- Dheeraj has twice as many sisters as he has brothers. If Deepa, Dheeraj's sister has the same number of brothers as she has sisters, then Deepa has how many brothers?
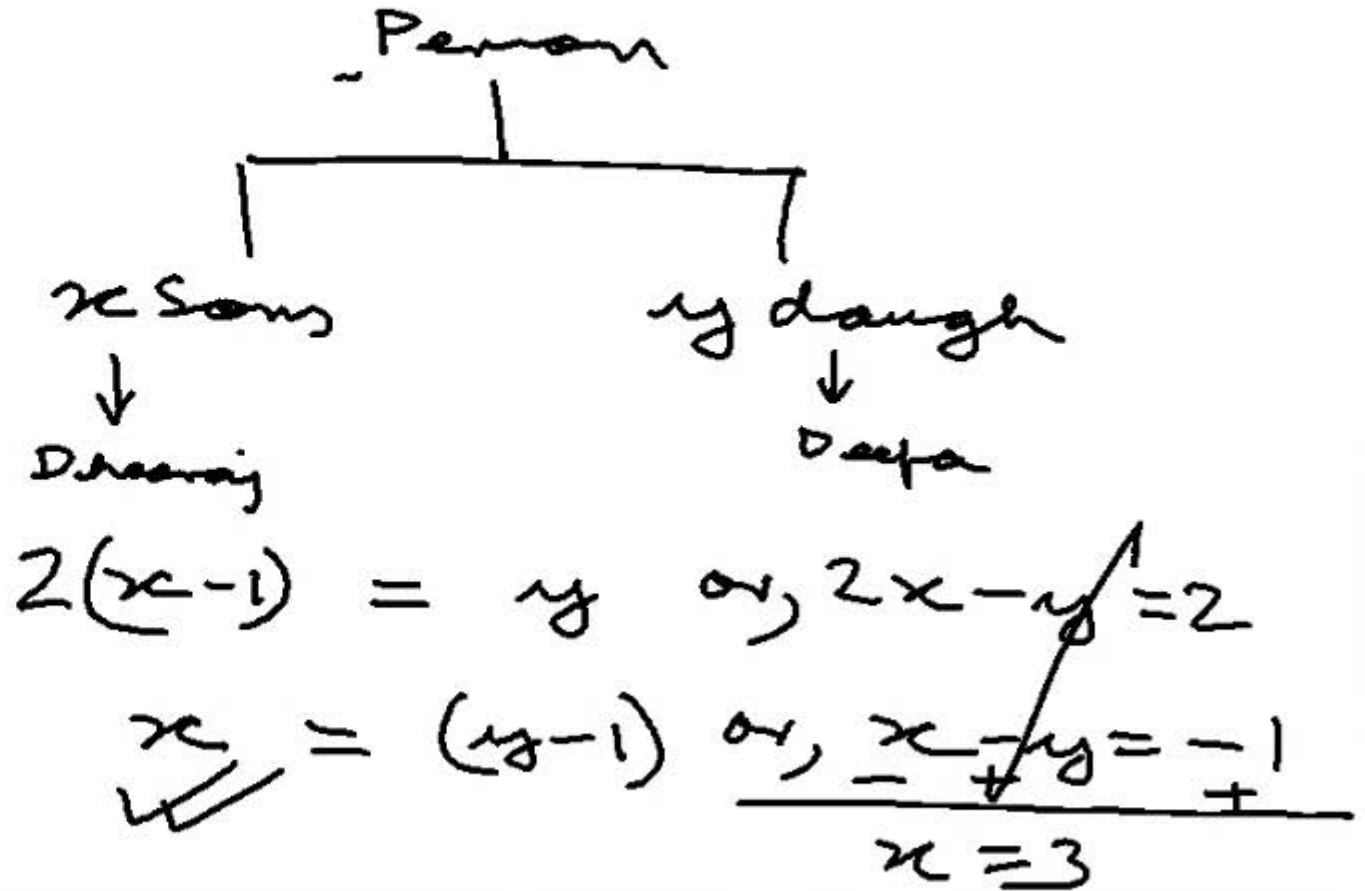 - (A) 2
  - (B) 3
  - (C) 4
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- Ninety is divided into three different parts such that the sum of the first two parts exceeds the sum of the second and the third parts by 18. If the smallest part is 18, then the greatest part is _____.
  - (A) 45
  - (B) 54
  - (C) 63
  - (D) Cannot be determined

- Solve : $5(x + 5) + 6 (y - 3) = - 4$
  $9 (x - 1) + 4 (y - 2) = 4$
  - (A) $x = 10, y = -9$
  - (B) $x = 9, y = -10$
  - (C) $x = 5, y = -6$
  - (D) $x = 6, y = -5$

$$16a = 10m$$

$$4a + 5m \overset{8a}{} = 12a$$

$$₹20$$

$$4a = 20$$

$$1a = 5₹$$

- A man had enough money to purchase 16 apples or 10 mangoes. If the man buys four apples and five mangoes and is left with ₹20, then what is the difference in the prices of an apple and a mango?
  - (A) ₹2
  - (B) ₹3
  - (C) ₹4
  - (D) ₹6

- Dheeraj has twice as many sisters as he has brothers. If Deepa, Dheeraj's sister has the same number of brothers as she has sisters, then Deepa has how many brothers?
  - (A) 2
  - (B) 3
  - (C) 4
  - (D) 6

- Ninety is divided into three different parts such that the sum of the first two parts exceeds the sum of the second and the third parts by 18. If the smallest part is 18, then the greatest part is _____.
  - (A) 45
  - (B) 54
  - (C) 63
  - (D) Cannot be determined

- Solve : $5(x + 5) + 6(y - 3) = -4$
  $9(x - 1) + 4(y - 2) = 4$
  - (A) x = 10, y = -9
  - (B) x = 9, y = -10
  - (C) x = 5, y = -6
  - (D) x = 6, y = -5

Person

x Sons → Dheeraj

y daugh → Deepa

$2(x - 1) = y$ or, $2x - y = 2$

$x = (y - 1)$ or, $x - y = -1$

$x = 3$

A man had enough money to purchase 16 apples or 10 mangoes. If the man buys four apples and five mangoes and is left with ₹20, then what is the difference in the prices of an apple and a mango?

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(C) ₹4 (D) ₹6

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90

| 1 | 2 | 3 |

① L   72−L   (18) ✗
   36   =36

$72 - (90 - L) = 18$
$-18 + L = 18$
$L = 36$

L + M   S
$= 90 - 18$ 18
$= 72$

L   72−L   18

② L   (18) ✓   72−L
   (45) $= 27$

$(L + 18) - (18 + 72 - L) = 18$
$L + 18 - 90 + L = 18$
$2L = 90 \quad or, \quad L = 45$ ✓

③ (18)   L   72−L
          72   0

$(18 + L) - 72 = 18$
$L = 72$

- A, B and C each had some amount of money. A doubled the amounts with the others. B then doubled the amounts with the others. C then doubled the amounts with the others. At this stage, each of them had ₹120. Find the initial amount with B.

- There are seven children standing in a line, not all of whom have the same number of cakes with them. If the first child distributes his cakes among the remaining six children such that he doubles their respective number of cakes, then he will be left with four cakes. Instead, if the second child takes away two cakes from each of the remaining six children, then he will be left with three less than the number of cakes that the first child initially had. What is the total number of cakes with the third child, the fourth child, ..., the seventh child?

  (A) 11   (B) 14
  (C) 12   (D) 15

- Anand had a certain number of chocolates with him. He distributed these chocolates among his three friends – A, B and C. To A, he gave half of the total number of chocolates, with him and five more. To B, he gave one-third of the remaining chocolates with him and four more. To C, he gave one-fourth of the remaining chocolates with him and three more. Finally he is left with 15 chocolates. Find the initial

	A	B	C
1st R (A)	195	105	60
2nd R (B)	30	210	120
3rd R (C)	60	60	240
final	120	120	120

B 105
C 60
A = 30 (in 2nd R)

195   30
A 30 ——→ 60
C 120   120 ——→ 240
B 60 (in 3rd R)
60   60
A 60 ——→ 120
B 60   60 ——→ 11

C 120 (final)
240

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---

1   2   3 4 5 6 7   5

x y z

cakes   cakes   cakes

$$x - (y+z) = 4 \quad \text{------①}$$
$$x - y = 4 + z$$
$$x - (y+12) = 3 \quad \text{------②}$$
$$x - y = 3 + 12 = 15$$
$$4 + z = 15$$
$$z = 11$$

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$$A = \frac{1}{2}\,\text{😊} + \boxed{5\,ch}$$

$$B = \frac{1}{3}\left(\text{Rem } \text{😊}\right) + \boxed{4\,ch}$$

$$C = \frac{1}{4}\left(\text{Rem } \text{😊}\right) + 3\,ch$$

$$\text{😊} = 15\,ch$$

$$\text{😊} = 42\,ch$$

$$\text{😊} = 24\,ch$$

A :– $\text{😊} = 47\,ch = \frac{1}{2}$ of the ch at beginning B :–

$$Beg = \frac{47}{\frac{1}{2}} = 47 \times 2 = \underline{94}$$

Before B :– $\dfrac{28}{\frac{2}{3}} = 28 \times \dfrac{3}{2} = 42\,ch$

$\text{😊} = 15\,ch$

$\text{😊} = 18\,ch \rightarrow \frac{3}{4}$ of the choc before giving to C.

Before C :– $\dfrac{18}{3/4} = 18 \times \dfrac{4}{3} = 24\,choc$

$\text{😊} = 28\,ch = \frac{2}{3}$ of the choc before giving to B