NUMBER SERIES

Directions (1-10): What value should come in place of (?) in the following number series?

1) 50, 56, 68, 86, 110, ?
A. 142 B. 140 C. 150 D. 152 E. 128

2) 110, 156, 272, 342, 506, ?
A. 756 B. 784 C. 812 D. 678 E. 840

3) 96, 480, 120, 600, ? , 750
A.140 B.150 C.100 D.200 E.250

4) 85, 106, 74, 119, ? , 136
A.59 B.65 C.42 D.79 E.58

5) 2, ?, 64, 1024, 32768
A.8 B.6 C.4 D.10 E.2

6) ?, 445, 534, 631, 736
A. 361 B. 364 C. 350 D. 354 E. 355

7) ?, 776, 806, 848, 904
A.744 B. 736 C.756 D.752 E.724

8) 500, 709, ?, 1289, 1672
A. 960 B. 970 C.950 D.940 E. 850

9) 148, 130, 116, 106, 100, ?
A. 86 B. 92 C. 98 D. 104 E. 88

10) 25, 60, 83, 96, 101, ?
A.105 B. 100 C. 108 D. 97 E. 112

Quadratic Equations

Directions (1-10): Following question contains two equations as I and II. You have to solve both equations and determine the relationship between them.

A. x > y
B. x ≥ y
C. x < y
D. x ≤ y
E. x = y or the relation cannot be established

1) I) $3x + 2y = 27$
II) $4x – 3y = 2$
2) I) $2x^2 + 12x + 18 = 0$
II) $3y^2 + 13y + 12 = 0$
3) I) $x^2 – 26x + 153 = 0$
II) $y^2 - 17y + 72 = 0$
4) I) $x^2-29x+204=0$
II) $y^2+4y-221=0$
5) I) $2x^2-10x-48=0$
II) $y^2-16y-297=0$
6) I) $x^2+19x+70=0$
II) $y^2+5y-234=0$
7) I) $x^2 – 32x + 247 = 0$
II) $y^2 – 35y + 304 = 0$
8) I) $5x^2 + 3x – 36 = 0$
II) $3y^2 + 7y – 40 = 0$
9) I) $3x^2 – 4x – 32 = 0$
II) $4y^2 + 45y + 126 = 0$
10) I) $6x^2 + 29x + 35 = 0$
II) $35y^2 – 12y + 1 = 0$

NUMBER SERIES

1) Answer: B
50 + 6 = 56
56 + 12 = 68
68 + 18 = 86
86 + 24 = 110
110 + 30 = 140
2) Answer: C
112 – 11 = 110
132 – 13 = 156
172 – 17 = 272
192 – 19 = 342
232 – 23 = 506
292 – 29 = 812
3) Answer: B
96 * 5 = 480
480 / 4 = 120
120 * 5 = 600
600 / 4 = 150
150 * 5 = 750
4) Answer: A
85 + 7 * 3 = 106
106 – 8 * 4 = 74
74 + 9 * 5 = 119
119 – 10 * 6 = 59
59 + 11 * 7 = 136
5) Answer: A
2 * 4 = 8
8 * 8 = 64
64 * 16 = 1024
1024 * 32 = 32768
6) Answer: B
192 + 3 = 364
212 + 4 = 445
232 + 5 = 534
252 + 6 = 631
272 + 7 = 736
7) Answer: C
756 + (4 * 5) = 776
776 + (5 * 6) = 806
806 + (6 * 7) = 848
848 + (7 * 8) = 904
8) Answer: B
8 3 – (3 * 4) = 500
9 3 – (4 * 5) = 709
103 – (5 * 6) = 970
113 – (6 * 7) = 1289
123 – (7 * 8) = 1672
9) Answer: C
122 + 22 = 148
112 + 32 = 130
102 + 42 = 116
9 2 + 52 = 106
8 2 + 62 = 100
7 2 + 72 = 98
10) Answer: B
25 + (62 – 1) = 60
60 + (52 – 2) = 83
83 + (42 – 3) = 96
96 + (32 – 4) = 101
101 + (22 – 5) = 100

Quadratic Equations

1) Answer: C
3x + 2y = 27 -- (1)
4x – 3y = 2 -- (2)
By solving the equation (1) and (2), we get,
x = 5, y = 6
x < y
2) Answer: D
$2x^2 + 12x + 18 = 0$
$2x^2 + 6x + 6x + 18 = 0$
2x (x + 3) + 6 (x + 3) = 0
(2x + 6) (x + 3) = 0
x = -3, -3
$3y^2 + 13y + 12 = 0$
$3y^2 + 9y + 4y + 12 = 0$
3y (y + 3) + 4 (y + 3) = 0
(3y + 4) (y + 3) = 0
y = -4/3, -3 = -1.33, -3
x ≤ y
3) Answer: B
$x^2 – 26x + 153 = 0$
(x – 9) (x – 17) = 0
x = 9, 17
$y^2 - 17y + 72 = 0$
(y – 9) (y – 8) = 0
y = 9, 8
x ≥ y
4) Answer: E
$x^2-29x+204=0$
$x^2-12x-17x+204=0$
x(x-12)-17(x-12)=0

(x-12) (x-17)=0
x=12, 17
y^2+4y-221=0
y^2+17y-13y-221=0
y(y+17)-13(y+17)=0
(y-13) (y+17)=0
y=13, -17
The relationship between x and y cannot be established

5) Answer: E

$2x^2$-10x-48=0
$2x^2$-16x+6x-48=0
2x(x-8)+6(x-8)=0
(2x+6)(x-8)=0
x=-3, 8
y^2-16y-297=0
y^2-27y+11y-297=0
y(y-27)+11(y-27)=0
(y+11)(y-27)=0
y=-11, 27
The relationship between x and y cannot be established

6) Answer: E

x^2+19x+70=0
x^2+14x+5x+70=0
x(x+14)+5(x+14)=0
(x+5)(x+14)=0
y^2+5y-234=0
y^2+18y-13y-234=0
y(y+18)-13(Y+18)=0
(y-13)(y+18)=0
y=13, -18
The relationship between x and y cannot be established

7) Answer: C

x^2 – 32x + 247 = 0
x^2 – 19x – 13x + 247 = 0
x(x – 19) – 13(x – 19) = 0
(x – 13)(x – 19) = 0
x = 13, 19
y^2 – 35y + 304 = 0
y^2 – 19y – 16y + 304 = 0
y(y – 19) – 16(y – 19) = 0
(y – 19)(y – 16) = 0
y = 19, 16

Relationship between x and y cannot be established.

8) Answer: C

From I,
$5x^2$ + 3x – 36 = 0
=> $5x^2$ + 15x – 12x – 36 = 0
=>5x (x + 3) – 12 (x + 3) = 0
=> (5x – 12) (x + 3) = 0
=> x = 12/5, -3

From II,
$3y^2$ + 7y – 40 = 0
=> $3y^2$ + 15y – 8y – 40 = 0
=>3y (y + 5) – 8 (y + 5) = 0
=> (3y – 8) (y + 5)= 0
=> y = 8/3 -5

Hence, relationship cannot be established.

9) Answer: A

I) $3x^2$ – 4x – 32 = 0
$3x^2$ – 12x + 8x – 32 = 0
3x (x – 4) + 8 (x – 4) = 0
(3x + 8) (x – 4) = 0
x = -8/3, 4 = -2.66, 4

II) $4y^2$ + 45y + 126 = 0

$4y^2$ + 24y + 21y + 126 = 0
4y (y + 6) + 21 (y + 6) = 0
(4y + 21) (y + 6) = 0
y = -5.25, -6

x > y

10) Answer: B

I). $6x^2$ + 29x + 35 = 0
=> $6x^2$ + 14x + 15x + 35 = 0
=>2x(3x + 7) + 5(3x + 7) = 0
=> (3x + 7)(2x + 5) = 0
=> x = -7/3, -5/2
II). $35y^2$ – 12y + 1 = 0
=> $35y^2$ – 7y – 5y + 1 = 0
=>7y(5y – 1) – 1(5y – 1) = 0
=> (7y – 1)(5y – 1) = 0
=> y = 1/7, 1/5

Hence, x < y