

Answer on Question #76830 – Math – Calculus

Question

The publishers of a business magazine are running a sales promotion for their weekly magazine. The number of prospective customers a sales representative sees per day varies from 1 to 40. The table shows the simulated data of the number of prospective subscribers approached by a sales representative for 8 consecutive weeks.

Day	1	2	3	4	5	6	7
Week 1	20	22	27	17	31	12	39
Week 2	26	13	30	18	24	14	32
Week 3	21	12	22	37	30	23	18
Week 4	15	33	10	28	34	24	22
Week 5	11	33	21	32	26	19	22
Week 6	19	27	20	18	31	14	37
Week 7	29	22	27	30	16	09	36
Week 8	08	28	19	28	25	36	26

If the sales representative is able to get 20% of the prospective customers to subscribe, the maximum expected number of subscriptions per week is. If the sales representative earns \$3 per subscription in addition to daily wages, the minimum expected value of the extra income per week is .

Solution

Expected numbers of subscriptions per week are:

$$\text{week 1: } 0.2 \cdot (20 + 22 + 27 + 17 + 31 + 12 + 39) = 33.6$$

$$\text{week 2: } 0.2 \cdot (26 + 13 + 30 + 18 + 24 + 14 + 32) = 31.4$$

$$\text{week 3: } 0.2 \cdot (21 + 12 + 22 + 37 + 30 + 23 + 18) = 32.6$$

$$\text{week 4: } 0.2 \cdot (15 + 33 + 10 + 28 + 34 + 24 + 22) = 33.2$$

$$\text{week 5: } 0.2 \cdot (11 + 33 + 21 + 32 + 26 + 19 + 22) = 32.8$$

$$\text{week 6: } 0.2 \cdot (19 + 27 + 20 + 18 + 31 + 14 + 37) = 33.2$$

$$\text{week 7: } 0.2 \cdot (29 + 22 + 27 + 30 + 16 + 09 + 36) = 31.8$$

$$\text{week 8: } 0.2 \cdot (08 + 28 + 19 + 28 + 25 + 36 + 26) = 34$$

The maximum expected number of subscriptions per week: 34

The minimum expected value of the extra income per week:

$$31.4 \cdot 3 = 94.2 \$$$