

Coloring KEY Arithmetic Series

Find the sum of the following arithmetic sequences. By matching the color to correct answer you can correctly fill in the picture.

①

* Orange: 12, 19, 26, 33, ... $n = 19$

$$a_{19} = 12 + (19-1) \cdot 7 \quad S_{19} = \frac{19(12+138)}{2}$$

$$a_{19} = 138 \quad S_{19} = 1425$$

Red: 1, .5, 0, -.5, -1, ... $n = 21$

$$a_{21} = 1 + (21-1) \cdot (-.5) \quad S_{21} = \frac{21(1+(-9))}{2}$$

$$a_{21} = -9 \quad S_{21} = -84$$

④

* Light Green: A display of cans in a grocery store consists of 15 rows. There are 45 cans on the bottom, 42 cans in the next row, and so on. How many cans did they use in the display?

$$a_{15} = 45 + (15-1) \cdot (-3) \quad S_{15} = \frac{15(45+3)}{2}$$

$$a_{15} = 3 \quad S_{15} = 360$$

Blue: 17, 25, 33, 41, ... $n = 24$

$$a_{24} = 17 + (24-1) \cdot 8 \quad S_{24} = \frac{24(17+201)}{2}$$

$$a_{24} = 201 \quad S_{24} = 2616$$

⑤

* Yellow: Tracy started a job at \$18,500 a year. Each year she received a raise of \$750. What is her total income after 10 years?

$$a_{10} = 18500 + (10-1) \cdot 750 \quad S_{10} = \frac{10(18500+25,250)}{2}$$

$$a_{10} = 25,250 \quad S_{10} = 218,750$$

②

* Pink: -9, -14, -19, -24, ... $n = 18$

$$a_{18} = -9 + (18-1) \cdot (-5) \quad S_{18} = \frac{18(-9+(-94))}{2}$$

$$a_{18} = -94 \quad S_{18} = -927$$

Grey: -2, -6, -10, -14, ... $n = 30$

$$a_{30} = -2 + (30-1) \cdot (-4) \quad S_{30} = \frac{30(-2+(-118))}{2}$$

$$a_{30} = -118 \quad S_{30} = -1800$$

Purple: -11, -7, -3, 1, ... $n = 22$

$$a_{22} = -11 + (22-1) \cdot 4 \quad S_{22} = \frac{22(-11+73)}{2}$$

$$a_{22} = 73 \quad S_{22} = 682$$

Brown: Joe started saving \$25 in January. Each month after, he increased the amount by \$5.

After two years how much will Joe have saved?

$$a_{24} = 25 + (24-1) \cdot 5 \quad S_{24} = \frac{24(25+140)}{2}$$

$$a_{24} = 140 \quad S_{24} = 1980$$

③

* Dark Green: -15, -9, -3, 3, ... $n = 17$

$$a_{17} = -15 + (17-1) \cdot 6 \quad S_{17} = \frac{17(-15+81)}{2}$$

$$a_{17} = 81 \quad S_{17} = 561$$

1	2	2	3	3	4	4	5
360	218,750	25,250	1800	1980	682	201	-94
561	2616	1425	198,750	8	9	9	10
				-927	-118	-84	-1800