Algebra and Patterns Review

Answers!

Name: _____

Complete the charts.

| n | 2n – 3 |
|---|---|
| 1 | 2 × 1 – 3 = –1 |
| 2 | 2 × 2 – 3 = 1 |
| 3 | $2\times3-3=3$ |
| 4 | $2\times4-3=5$ |
| 5 | $2\times5-3=7$ |

| z | 3z + 4 |
|---|---|
| 1 | 3 × 1 + 4 = 7 |
| 2 | $3\times2+4=10$ |
| 3 | $3\times3+4=13$ |
| 4 | $3\times4+4=16$ |
| 5 | $3\times5+4=19$ |

| y | 5 – 2y |
|---|---|
| 1 | 5 – 2 × 1 = 3 |
| 2 | $5-2\times2=1$ |
| 3 | 5 – 2 × 3 = –1 |
| 4 | $5-2\times4=5-8=-3$ |
| 5 | $5-2\times5=5-10=-5$ |

Evaluate the expressions with the given values for the variables.

$7x-3$ with $x=2$

$7\times2-3$

$14-3$

$11$

$14-3z$ with $z=2$

$14-3\times2$

$14-6$

$8$

$\frac{12}{c}-9$ with $c=3$

$\frac{12}{3}-9$

$4-9$

$-5$

$4x+11$ with $x=2$

$4\times2+11$

$8+11$

$19$

$3-2w$ with $w=6$

$3-2\times6$

$3-12$

$-9$

$5p-20$ with $p=3$

$5\times3-20$

$15-20$

$-5$

$5+\frac{12}{s}$ with $s=6$

$5+\frac{12}{6}$

$5+2$

$7$

$\frac{k}{2}+5$ with $k=4$

$\frac{4}{2}+5$

$2+5$

$7$

$6+\frac{x}{6}$ with $x=12$

$6+\frac{12}{6}$

$6+2$

$8$

Solve the equations (find the value for the variable that makes the statement true)

$y-2=14$

$+2 \quad +2$

$y=16$

$\frac{3z}{3}=\frac{27}{3}$

$z=9$

$4\times\frac{k}{4}=7\times4$

$k=28$

$3x-2=7$

$+2 \quad +2$

$\frac{3x}{3}=\frac{9}{3}$

$x=3$

(inspection or systematic trial accepted!)

Algebra and Patterns Review

Sally is doodling circles, and comes up with a pattern:

What are the number of circles in doodles 5, 6, and 7?

What is the expression for the number of circles in ANY doodle?

How many circles are in the 50th doodle?

| Doodle number | Number of Circles |
|---|---|
| 1 | 3 |
| 2 | 7 |
| 3 | 11 |
| 4 | 15 |
| 5 | 19 |
| 6 | 23 |
| 7 | 27 |
| ⋮ | ⋮ |
| n | 4n−1 |
| 50 | 199 |

Goes up by 4 → start with 4n

4n: 4, 8, 12, 16, 20, 24, 28

one too high, need to −1

4×50−1

200−1

199

John started the new year with $11 in his piggy bank. Every week, he adds $3 to the piggy bank from the chores he does.

Make a chart showing how much money he has for the first 5 weeks of the year.

| | Money in his piggy bank: |
|---|---|
| Start of the year: | $11 |
| After 1 week: | $14 |
| After 2 weeks: | $17 |
| After 3 weeks: | $20 |
| After 4 weeks: | $23 |
| After 5 weeks: | $26 |

If he doesn't spend any of his money, how much will John have in his piggy bank after 50 weeks?

Pattern: 11 + 3w (start with 11, add 3 each step)

11 + 3×50

11 + 150

$161

$161 after 50 weeks