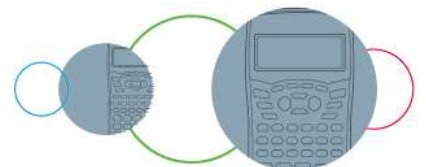


SHARP

Worksheet 4 Memorandum: Numeric and Geometric Patterns

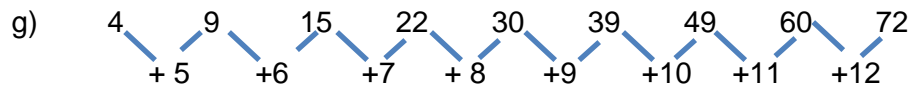
Grade 8 Mathematics

1. a) 3; 7; 11; 15...
Add 4 to the previous term
- b) 1; 4; 9; 16...
Square the term position
- c) 20; 17; 14; 11...
Subtract 3 from the previous term
- d) 3; 6; 12; 24...
Multiply the previous term by 2
- e) 0; 1; 1; 2; 3; 5...
Add the last two terms of the sequence to get the next term.
- f) 99; 87; 75; 63...
Subtract 12 from the previous term
- g) 4; 9; 15; 22 ...
Add one more than the previous number added starting with 5;
- h) 0; 7; 26; 63...
The term position cubed minus one
- i) 40; 20; 10; 5...
Divide the previous term by 2.
- j) 76; 68; 60; 52...
Subtract 8 from the previous term.
2. a) $y = 4x - 1$
- b) $y = x^2$
- c) $y = -3x + 23$
- d) $y = \frac{3}{2} \times 2^x$
- f) $y = -12x + 111$
- h) $y = x^3 - 1$
- i) $y = 80 \div 2^x$
- j) $y = -8x + 84$
3. a) $y = 4x - 1$
 $y = 4(9) - 1$
 $y = 35$
- b) $y = x^2$
 $y = (9)^2$
 $y = 81$
- c) $y = -3x + 23$
 $y = -3(9) + 23$
 $y = -4$
- d) $y = \frac{3}{2} \times 2^x$
 $y = \frac{3}{2} \times 2^9$
 $y = 768$
- e) 0; 1; 1; 2; 3; 5; 8; 13; 21 → The ninth term is 21.



f) $y = -12x + 111$
 $y = -12(9) + 111$
 $y = 3$

h) $y = x^3 - 1$
 $y = (9)^3 - 1$
 $y = 728$



Therefore the ninth term is 72

i) $y = 80 \div 2^x$
 $y = 80 \div 2^9$
 $y = \frac{5}{32}$

j) $y = -8x + 84$
 $y = -8(9) + 84$
 $y = 12$

4. a) Rule: $y = 9x + 2$

x	1	2	3	6	8	11	15
y	11	20	29	56	74	101	137

b) Rule: $m = n^2 - 2$

m	1	2	3	4	5	8	11
n	-1	2	7	14	23	62	119

c) Rule: $p = -3q + 9$

p	1	2	3	6	9	12	17
q	6	3	0	-9	-18	-27	-42

d) Rule: $r = 2^s$

r	1	2	3	4	6	9	12
s	2	4	8	16	64	512	4096

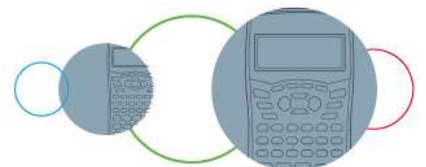
e) Rule: $v = \frac{5}{3} \times 3^w$

v	1	2	3	4	6	32 805	11
w	5	15	45	135	1215	9	295 245

5. a)



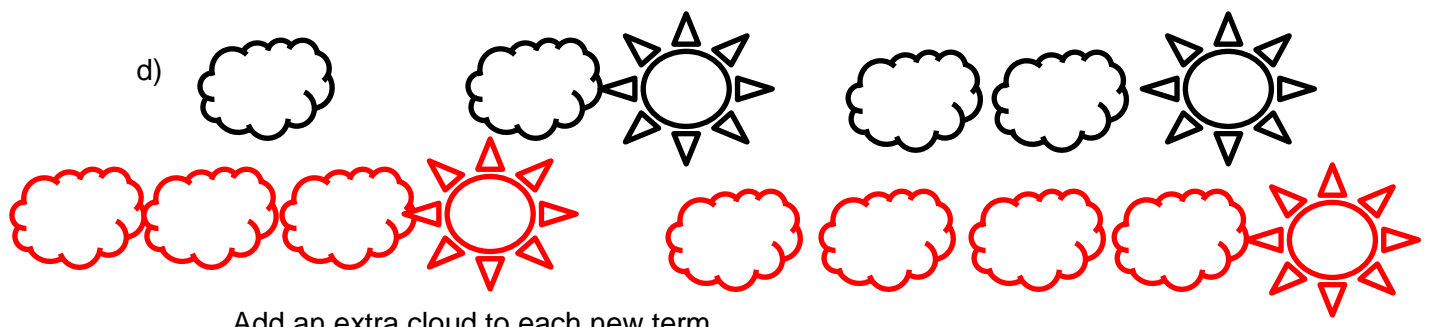
Add one more side to the next shape.



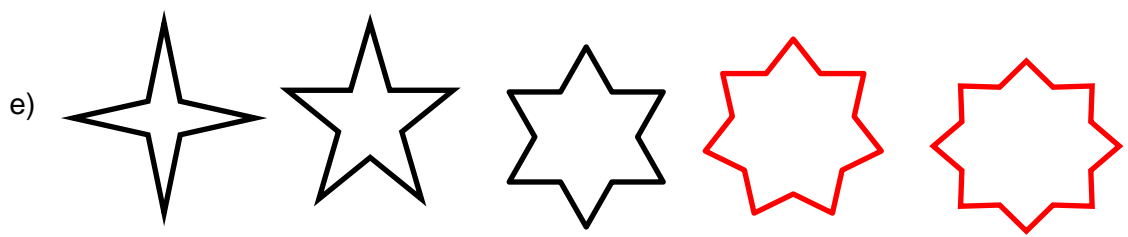


Rotate the shape 90° to the right.

c) M T W T ... F S
 These are the first letters of the days of the week.



Add an extra cloud to each new term



Add an extra point to the next star.

f) 3; 3.1; 3.14; 3.141; ... 3.1415; 3.14159
 The add the next digit for π .

