

SHARP

Worksheet 4: Numeric and Geometric Patterns

Grade 8 Mathematics

1. Look at the following patterns and explain their rules in your own words:

- | | |
|------------------------|----------------------|
| a) 3; 7; 11; 15... | b) 1; 4; 9; 16... |
| c) 20; 17; 14; 11... | d) 3; 6; 12; 24... |
| e) 0; 1; 1; 2; 3; 5... | f) 99; 87; 75; 63... |
| g) 4; 9; 15; 22 ... | h) 0; 7; 26; 63... |
| i) 40; 20; 10; 5... | j) 76; 68; 60; 52... |

2. For each of the patterns in question 1 above, give the rule in algebraic form.

*Do not give the rules for e). and g)

3. For each of the patterns in question 1 and using the algebraic rules formed in question 2, find the 9th term of each pattern.

* For questions e) and g) simply continue the pattern until the 9th term.

4. Fill in the missing values in these tables and write down the rule in algebraic form after completing the table.

a)

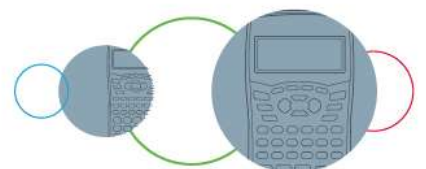
| | | | | | | | |
|-----|----|----|----|----|---|-----|----|
| x | 1 | 2 | 3 | ? | 8 | ? | 15 |
| y | 11 | 20 | 29 | 56 | ? | 101 | ? |

b)

| | | | | | | | |
|-----|----|---|---|----|---|----|----|
| m | 1 | 2 | 3 | 4 | 5 | ? | 11 |
| n | -1 | 2 | 7 | 14 | ? | 62 | ? |

c)

| | | | | | | | |
|-----|---|---|---|----|---|-----|----|
| p | 1 | 2 | 3 | ? | 9 | ? | 17 |
| q | 6 | 3 | 0 | -9 | ? | -27 | ? |



d)

| | | | | | | | |
|----------|---|---|---|---|----|---|------|
| <i>r</i> | 1 | 2 | 3 | 4 | ? | 9 | ? |
| <i>s</i> | 2 | 4 | 8 | ? | 64 | ? | 4096 |

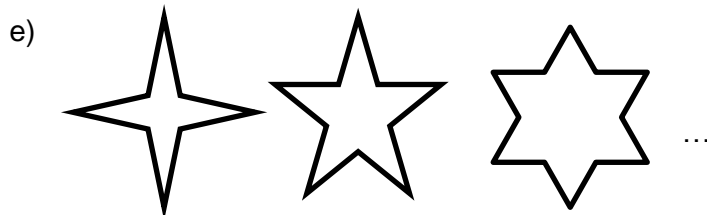
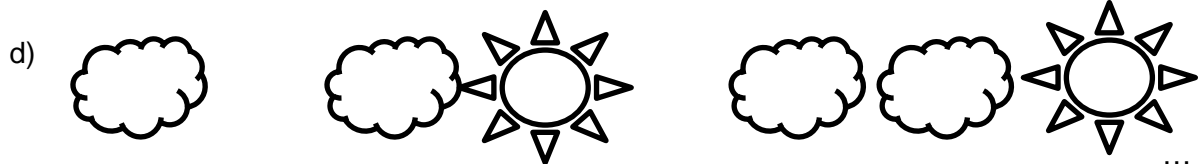
e)

| | | | | | | | |
|----------|---|----|----|---|------|--------|---------|
| <i>v</i> | 1 | 2 | 3 | 4 | ? | 32 805 | ? |
| <i>w</i> | 5 | 15 | 45 | ? | 1215 | ? | 295 245 |

5. For each of the patterns below, continue the pattern by drawing in the next two terms in the pattern and then write down a rule in words for the pattern.



c) M T W T ...



f) 3; 3.1; 3.14; 3.141; ...

