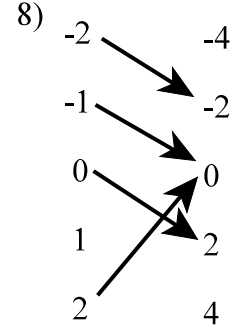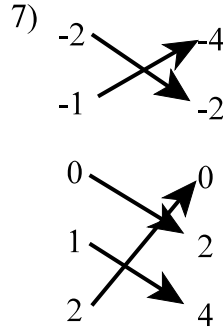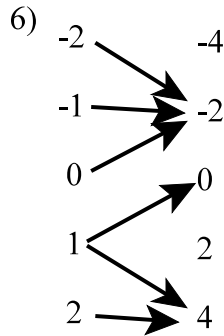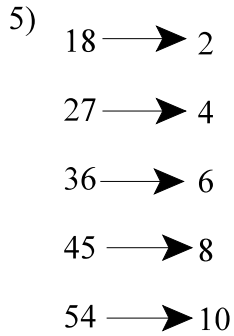1) What is a relation?   2) What is a function?

3) What is the domain of a function?   4) What is the range of a function?

Are the relationships functions?

5)
18 $\longrightarrow$ 2

27 $\longrightarrow$ 4

36 $\longrightarrow$ 6

45 $\longrightarrow$ 8

54 $\longrightarrow$ 10

6)
-2   -4
-1   -2
0   0
1   2
2   4

7)
-2   -4
-1   -2
0   0
1   2
2   4

8)
-2   -4
-1   -2
0   0
1   2
2   4

Does the t-table describe a function? Explain?

9)

Input	7	8	9	8	7
Outcome	5	-2	-2	5	5

10)

Input	6	5	4	3	5
Outcome	1	2	3	4	2

11)

Input	-8	-4	0	1	2
Outcome	3	8	-2	5	1

12)

Input	4	3	2	3	4
Outcome	1	2	3	4	5

Give the domain and range of each relation in 13 - 15.

14)   {(5, 3); (6, 3); (7, 3); (8, 3)}

13)

t	-1	3	5	-7
v	4	-2	9	-1

15)

x	y
4	1
5	1
6	-2
7	-2

Fill in the table for each function.

16) $y = 3x + 1$

x	y
-3	
-1	
2	
	13

17) $q = p^2 + 5$

p	q
-2	
0	
1	
3	

18) $f(x) = x2 + x$

x	f(x)
-1	
2	
	20
	56

19) $f(t) = t^3$

t	1	2	3	4
f(t)				

20) $z = 2^y$

y	0	1	2	3
z				

Are the following relationships functions? If so, give the domain.

21) {(3, -1); (7, 2); (9, 0); (7, -1)}   22) {(-1, 3); (2, 3); (-4, 3)}   23) {(-2, 3); (-2, 4); (-2, 5); (-2, 6)}

Which sets of ordered pairs represent functions from A to B? Explain.
A = {5, 6, 7, 8, 9};   B = {-1, -2, -3, -4, -5}

24) {(5, -1); (8, -2); (6, -3); (5, -4)}   25) {(7, -3); (9, -2); (6, -1); (5, -5); (8, -4)}

Match the set of values to the function that produces the set.

26)   27)   28)   29)   A. f(a) = a - 1

a	f(a)
-2	-3
-1	-4
3	-8
5	-10

a	f(a)
-1	4
0	3
1	2
3	0

a	f(a)
-1	4
0	3
1	4
2	7

a	f(a)
1	3
2	9
3	27
4	81

B. f(a) = a^2 + 3

C. f(a) = -a + 3

D. f(a) = -a - 5

E. f(a) = 3^a

Evaluate the following functions for f(1), f(-2), f(3x), and f(x - 1). (Use the back, if necessary.)

30) f(x) = x - 3   31) f(x) = 4x + 1   32) f(x) = x^2 - 3x + 8   33) f(x) = $-x^2$ + x + 9

Are the relations graphed below functions?

36)   37)   38)   39)