Clue 1 Pascal's Triangle

Complete Pascal's triangle by adding the numbers in the 2 squares above.

Find out which number represents each letter and decipher the message.

Pascal's triangle (filled cells shown by row):

- Row 1: 1
- Row 2: 1 — 1
- Row 3: 1 — — 1
- Row 4: 1 — j — 1
- Row 5: 1 — q — v — 1
- Row 6: 1 — x — k — 1
- Row 7: 1 — f — p — 1
- Row 8: 1 — r — c — h — 1
- Row 9: 1 — y — b — m — 1
- Row 10: 1 — l — a — 1
- Row 11: 1 — s — d — u — 1
- Row 12: 1 — i — n — 1
- Row 13: 1 — z — g — w — t — e — o — 1

A	B	C	D	E	F	G	H	I	J	K	L	M

N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Message:

28	210	165	210	462	66	924	45	120	792	126

924	45	462	462	792	84	924	792	462	924	

Clue 2—The net closes in.

Start with the number in the triangle. Follow the arrows round each cube net (calculating as you go) until you reach a hexagon. Can you work any of these out without making the cubes?

1)

```
         -2
         ⇩
⇦△3   ⟨x2⟩   ⇦+3
      ⟨+7⟩
         ⇧
         +3
```

2)

```
+7⇨
+3⇨  ⟨-4⟩
      x3⇨  ⟨+2⟩
            △5
            ⇩
```

3)

```
         ⇦x2
⟨+1⟩   -1
         ⇩
         +2   △7⇨
         ⇩
         ⟨-3⟩
```

4)

```
⇦+2   -1
        ⇩
        +7
        ⇩
      ⟨-3⟩   ⇦+8
              △6
              ⇩
```

5)

```
               ⟨+7⟩
  ⇧      ⇧      ⇧
 +7     -2     x3
         ⇧
        -1
         ⇦△5
```

6)

```
   ⇧
  +8
 x2⇨   -1
         ⇩
        +7⇨  ⟨-2⟩
        △8
        ⇩
```

7)

```
-3⇨   +4    ⇧
        ⇩   +8
      ⟨x2⟩
       △9⇨
      ⟨-2⟩
```

8)

```
⟨x1⟩   +6
         ⇩
        -3    △4⇨
         ⇩
        ⟨+2⟩
        ⇦x5
```

9)

+3 ⇨

-2 ⇨

+4 ⇨   ⟨-6⟩

△8 ⇨

+10 ⇨

10)

⟸-4   ⇧ -6

x7 ⇩

+4 ⇩   △9 ⇨

⟨-2⟩

11)

⟨+5⟩   ⟸+9

⟸+5

⟸-7

⟸+1   △10 ⇨

12)

⟨+4⟩

⟸△3   ⇧ -2

-7 ⇩   +7 ⇨

+6 ⇨

13)

⇧ -6

⟨-6⟩   ⟸-2   △7 ⇨

⟸+11

⟸+4

14)

+1 ⇩   x2 ⇨   +3 ⇨

+2 ⇩

⟨-7⟩

△5 ⇨

15)

⇧ △6

⟸+7   +5 ⇨   ⟨+2⟩

⇧ -1

x3 ⇨
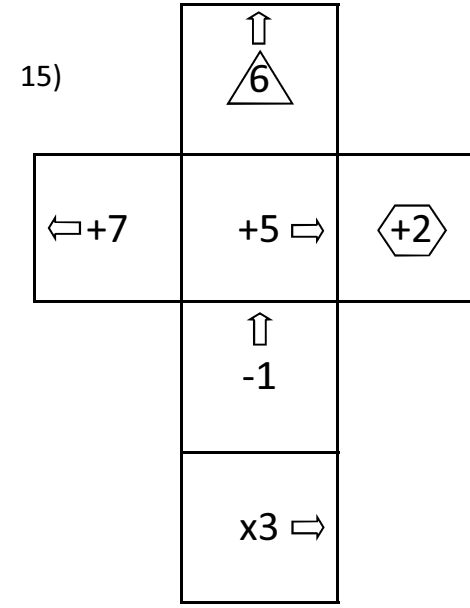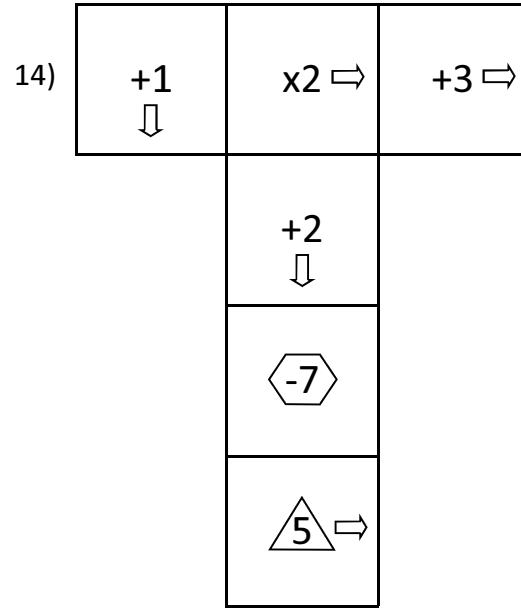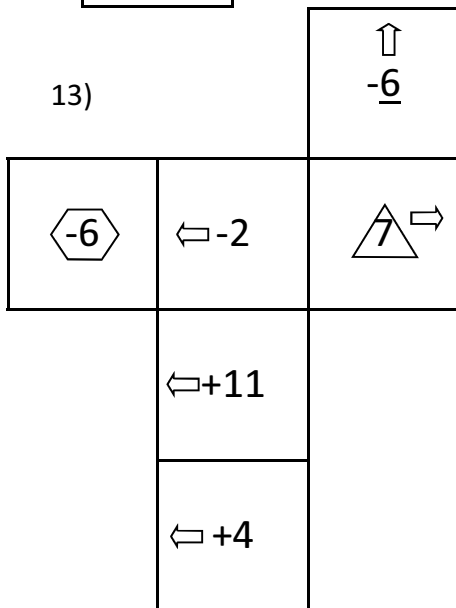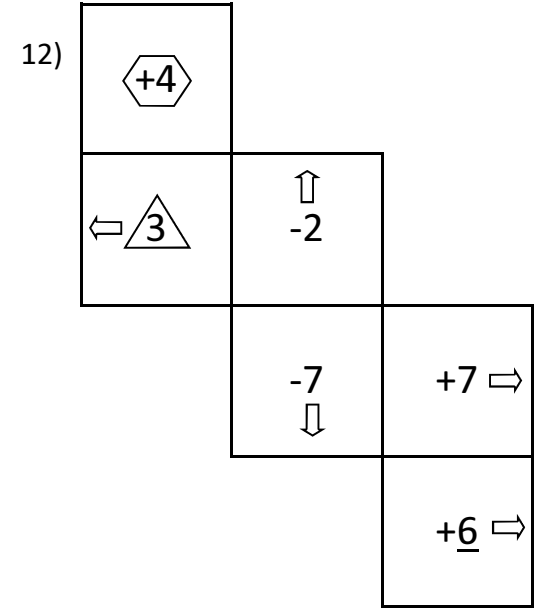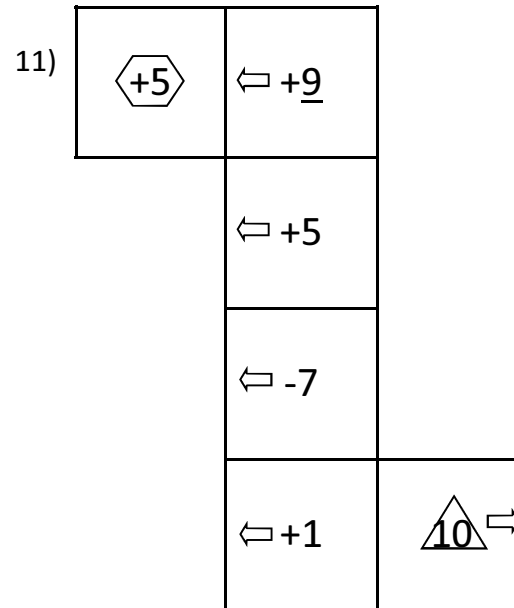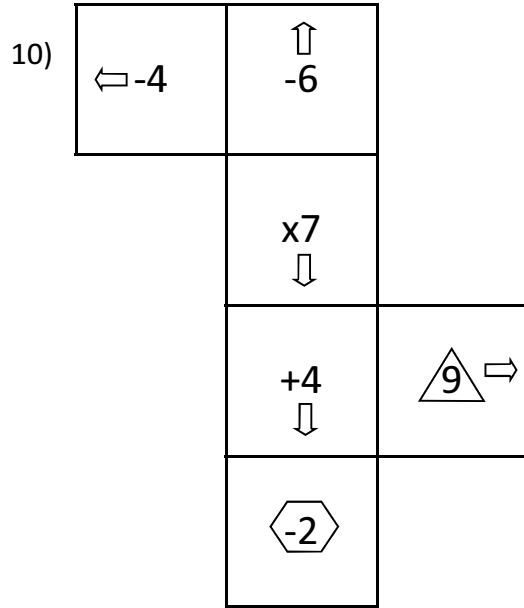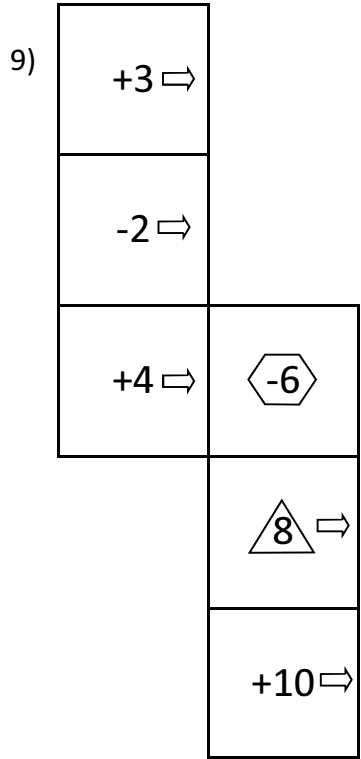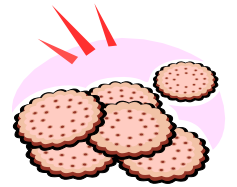
Clue 3—Horatio's biscuits.

Horatio's biscuits are made with many recipes, each with a different ratio of the ingredients.
Find out how many grams of cherries are needed for each recipe and then divide that by 10.
Then decode (a=1, b=2, c=3 etc)

dates	almonds	cherries	sugar	butter	Total weight	Cherries g	letter
1	3	4	2	2	390		
1	2	1	3	3	400		
4	2	5	5	4	600		
1	1	1	1	1	250		
1	1	4	1	1	380		
	4	5	2	4	420		
2	4	6	3	3	450		
3		2	3	4	1200		
2	5	7	5	2	570		
	3	2	1	4	600		
4	5	2	8	1	500		
4	6	1	8	1	1000		
	1	3	2	3	480		
2	3	2	3	2	540		
3	2	4	5	2	560		
5	3	3	6	4	70		
4		5	3	3	660		
2	3	2	2	3	60		
1	1	1	1	1	700		
	6	2	3	3	490		
3	4	3	4	4	900		

Clue 4—the odds are against you!

1. What is the probability of getting an odd number?

2. What is the probability of getting a number greater than 5?

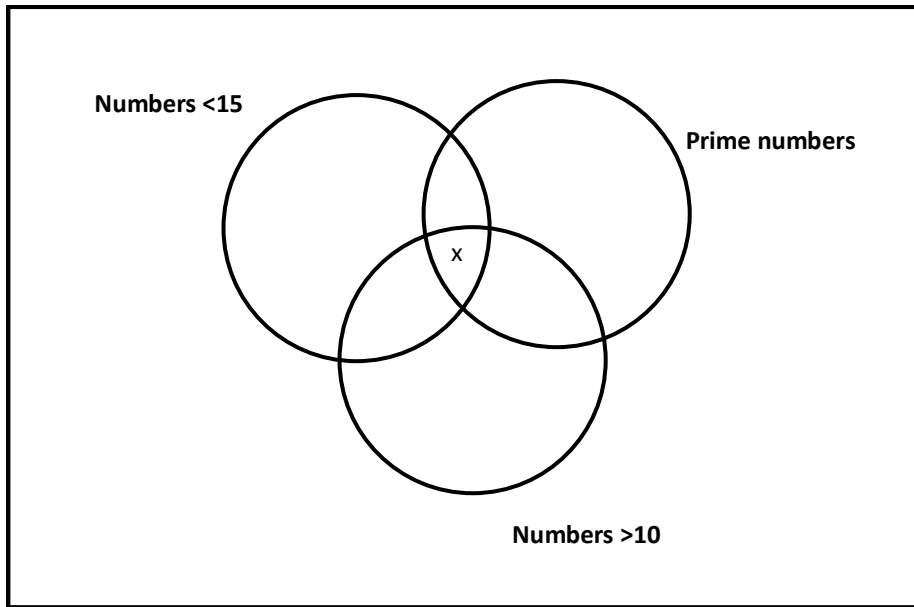3. What is the probability of getting a square number?
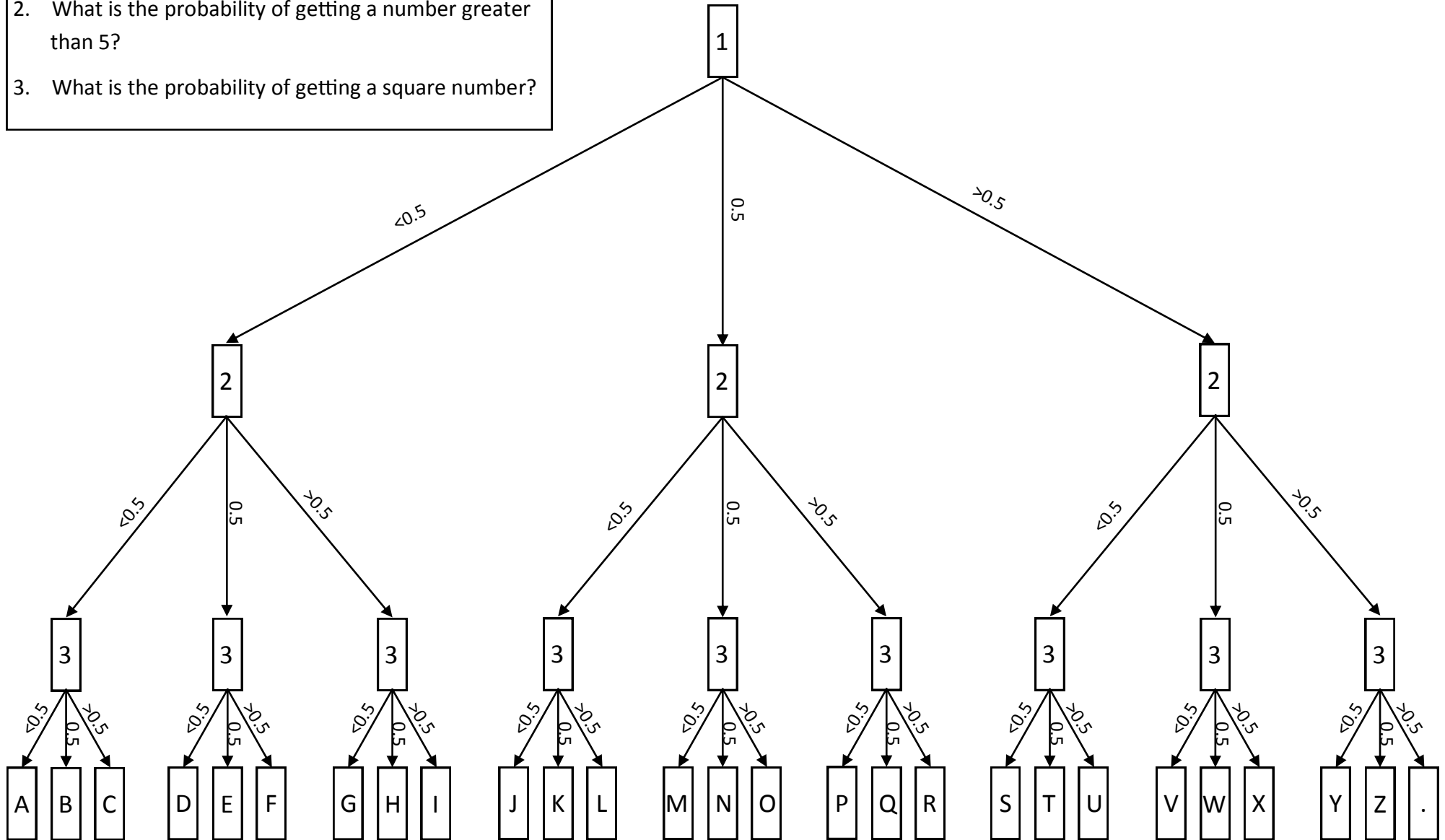
Each spinner represents one letter. Answer each of the 3 questions in order, to find out which.
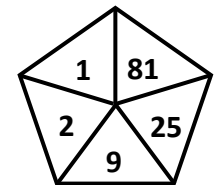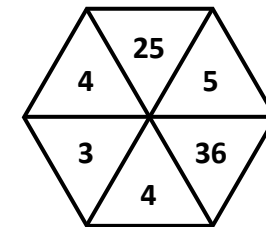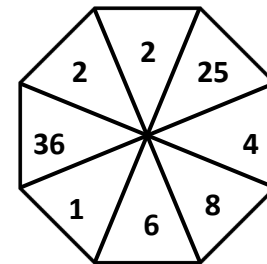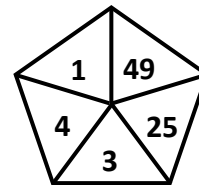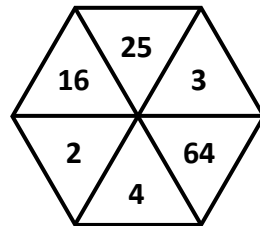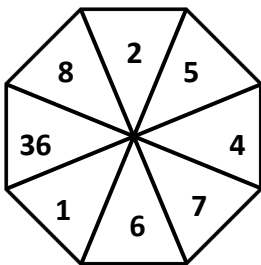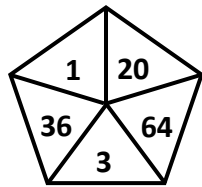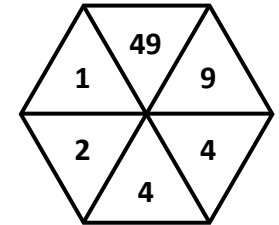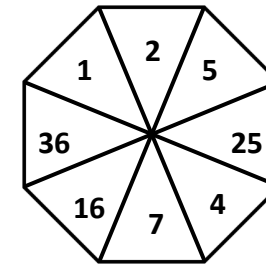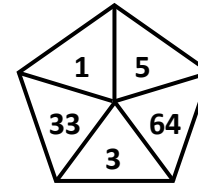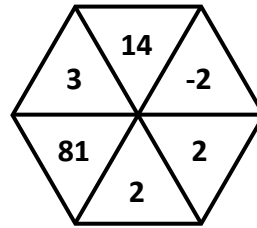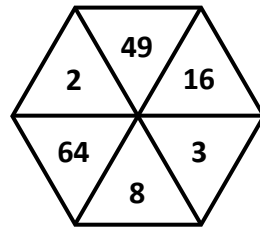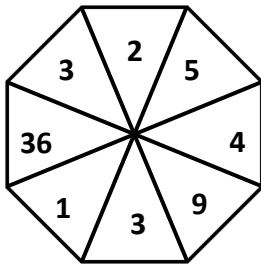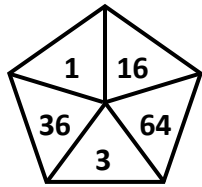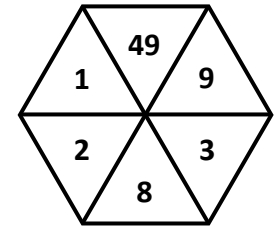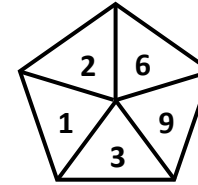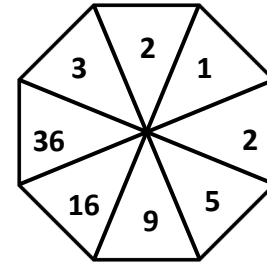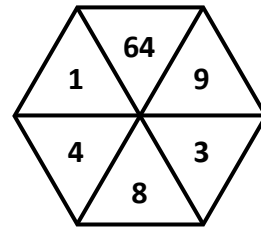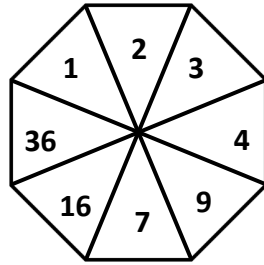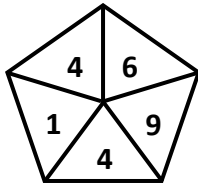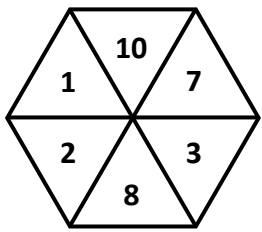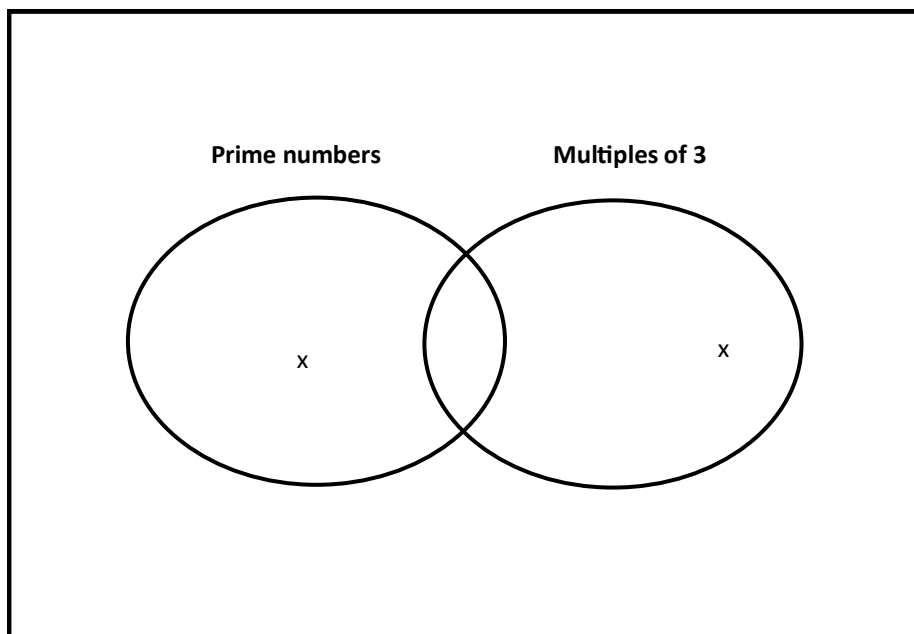
Clue 5—Venn diagrams

Each Venn diagram will give you the jumbled up letters for one word. Put the numbers into the Venn diagrams. Take the numbers in the section(s) marked x and decode them (a=1, b=2,c=3 etc). Rearrange the letters to make a word.
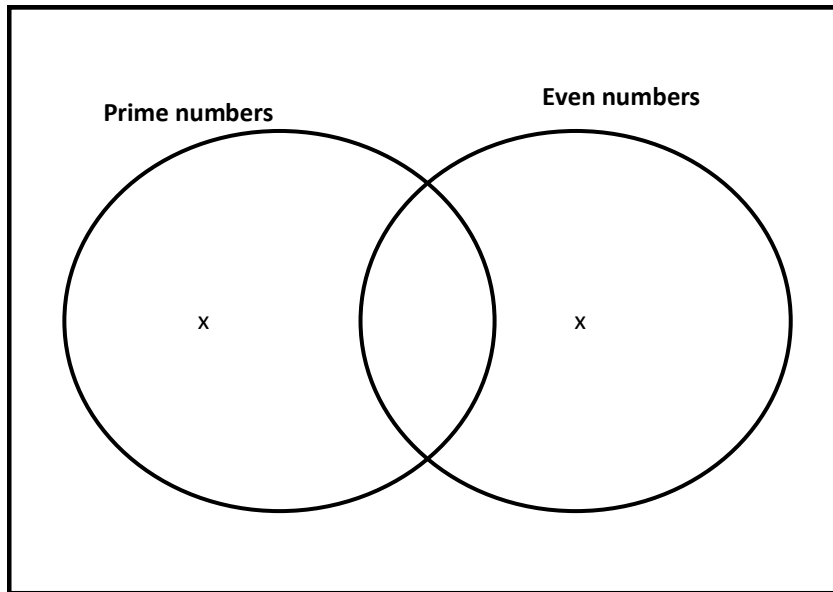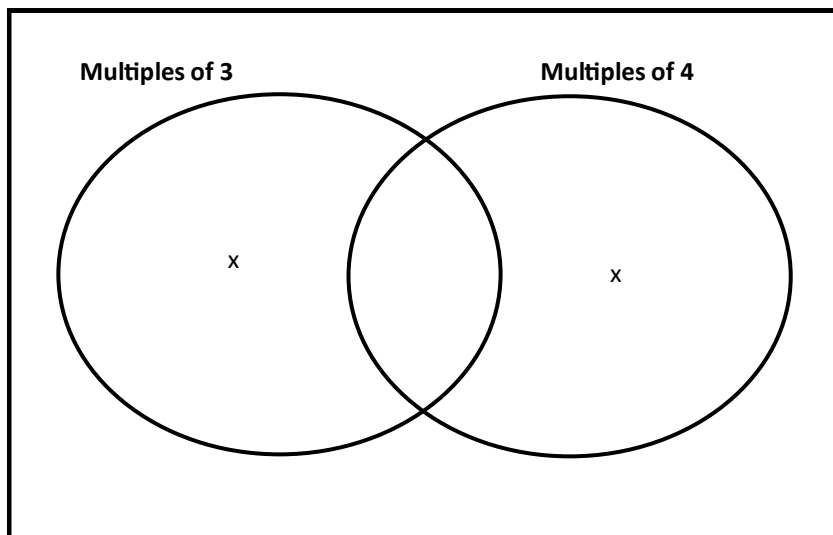
1) 3, 13, 5, 6, 18, 25, 7, 15, 12

Numbers <15

Prime numbers

X

Numbers >10

2) 10, 5, 9, 20, 16, 19, 11, 25, 22, 4, 8, 12, 3

Prime numbers   Multiples of 3

X   X

3) 2, 5, 9, 6, 15, 18, 5, 21, 25

Prime numbers   Even numbers

x   x

4) 15, 7, 18, 15, 10, 4, 1, 15, 14, 20, 21, 12, 24

Multiples of 3   Multiples of 4

x   x

5) 1, 14, 12, 19, 42, 3, 18, 5, 24, 20, 21, 9, 6, 9, 12, 20, 9, 7, 22, 6

Multiples of 7   Multiples of 6

x