Math Bomb II

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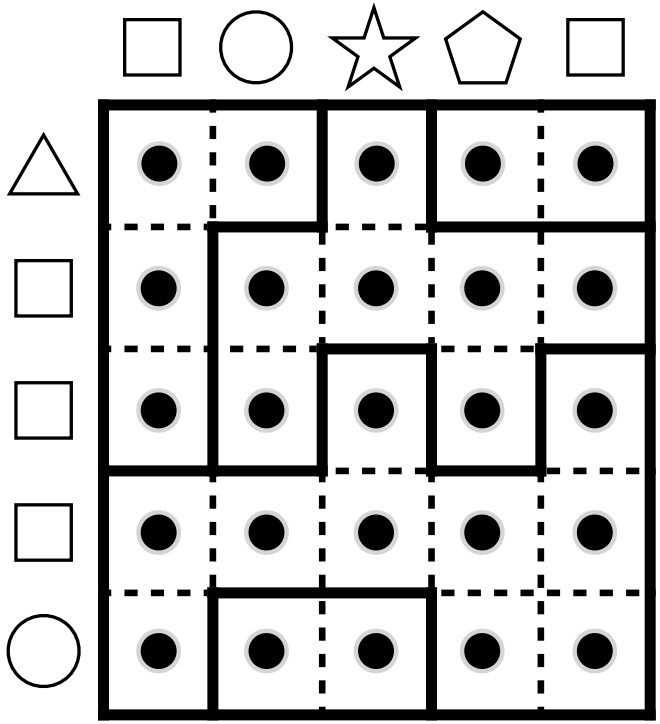
Welcome to MATH BOMB. This is a fun, interactive mathematics experience where students defuse a bomb. This package includes 4 components:

1. Bomb Video: The bomb video can be found at this link. The timer is set at 40 minutes. The activity can take shorter or longer depending on the group of students you are working with.
2. Answer Sheets: Has prompts to guide students through the bomb defuse.
3. Manual: Printable instructions to defuse the bomb.
4. Solutions: A filled in answer sheet for reference.

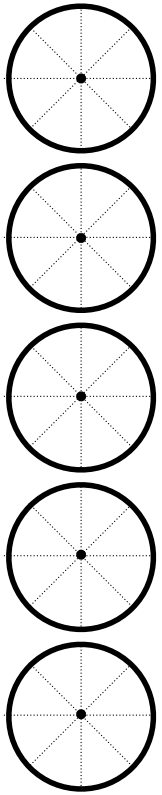
This bomb is intended for grade 6-9 students, but can also work for gifted grade 2-5 students or as a fun activity for grade 10 and above students. Below is a brief description of some mathematics concepts that are required to defuse this bomb:

- Counting # of divisors a number has.
- Logic and reasoning.
- Angles of rotation.
- Number sequences.

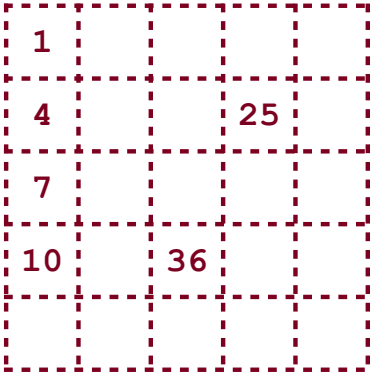
Shade the buttons that are pressed

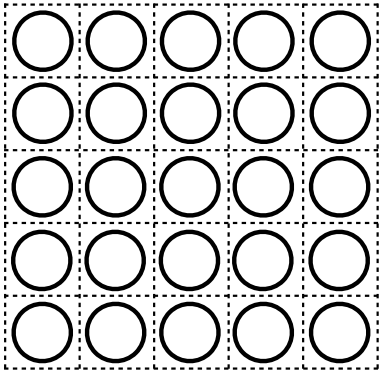


Connect the right plugs



Draw the correct Dial Positions





Shade the buttons that are pressed

Write the codes you enter

1. 2. 3.

On the sides of the bomb, there are several red buttons. You must press down **ALL** the buttons with an even number of positive divisors.

There is also a keypad on the bomb that requires you to enter three unique codes in succession. Follow the directions below:

1. Green Buttons ♠ − Spa + SC + Opposite of beginning
2. 13, I, II, III, IV, V
3. Draw an arrow from σ to 77. 180° ↻. 90° ↺. 180° ↻. 90° ↻.

There are five turnable dials on the bomb. Dial I should be set 90° East of North. The instructions below indicate the positions of the four other dials.

1. Dial II should be turned $\square^\circ$ ↻ past the position of dial III.
2. Dial III Should be turned $\triangle^\circ$ ↺ of dial I.
3. Dial IV points 90° ↺ of Dial V
4. Dial V points 270° ↻ of Dial I.
5. $\triangle$ is half of $\square$.
6. $\square$ is a quarter of a full rotation.

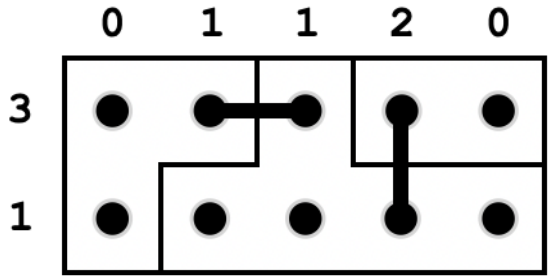
There is a 5×5 grid of green buttons enclosed by colourful cages on the bomb. To deactivate this component you will have to press the green buttons so that the following rules apply:

1. There is only one green button pressed in each row, column, and colourful cage.
2. Adjacent buttons cannot be pressed. Adjacent buttons are ones that are *next* to each other (even diagonally).

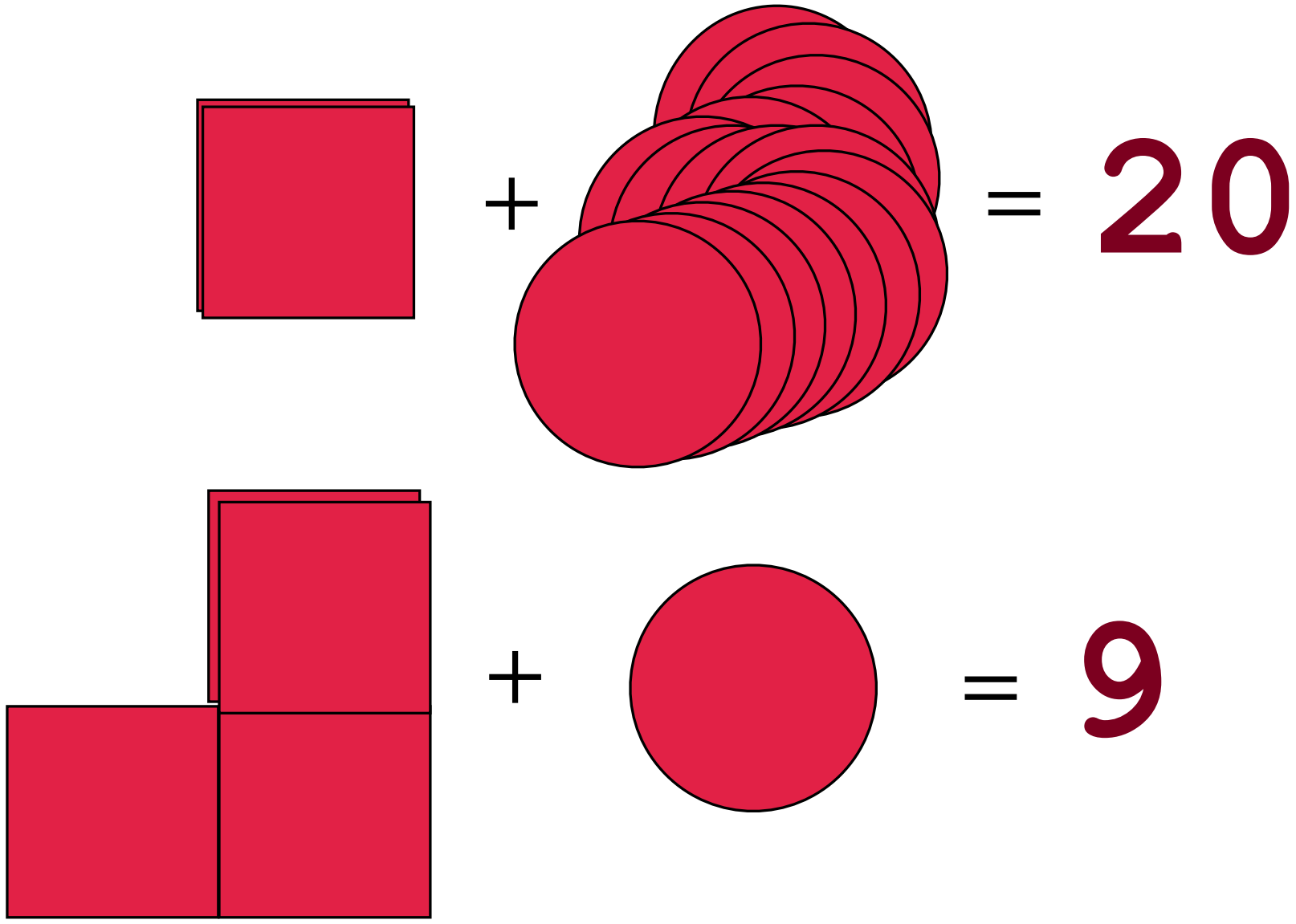
There is a 5×5 grid of plug-ins and colourful regions on the bomb. To deactivate this component of the bomb you will need to connect the right plugs with wires so that the following holds:

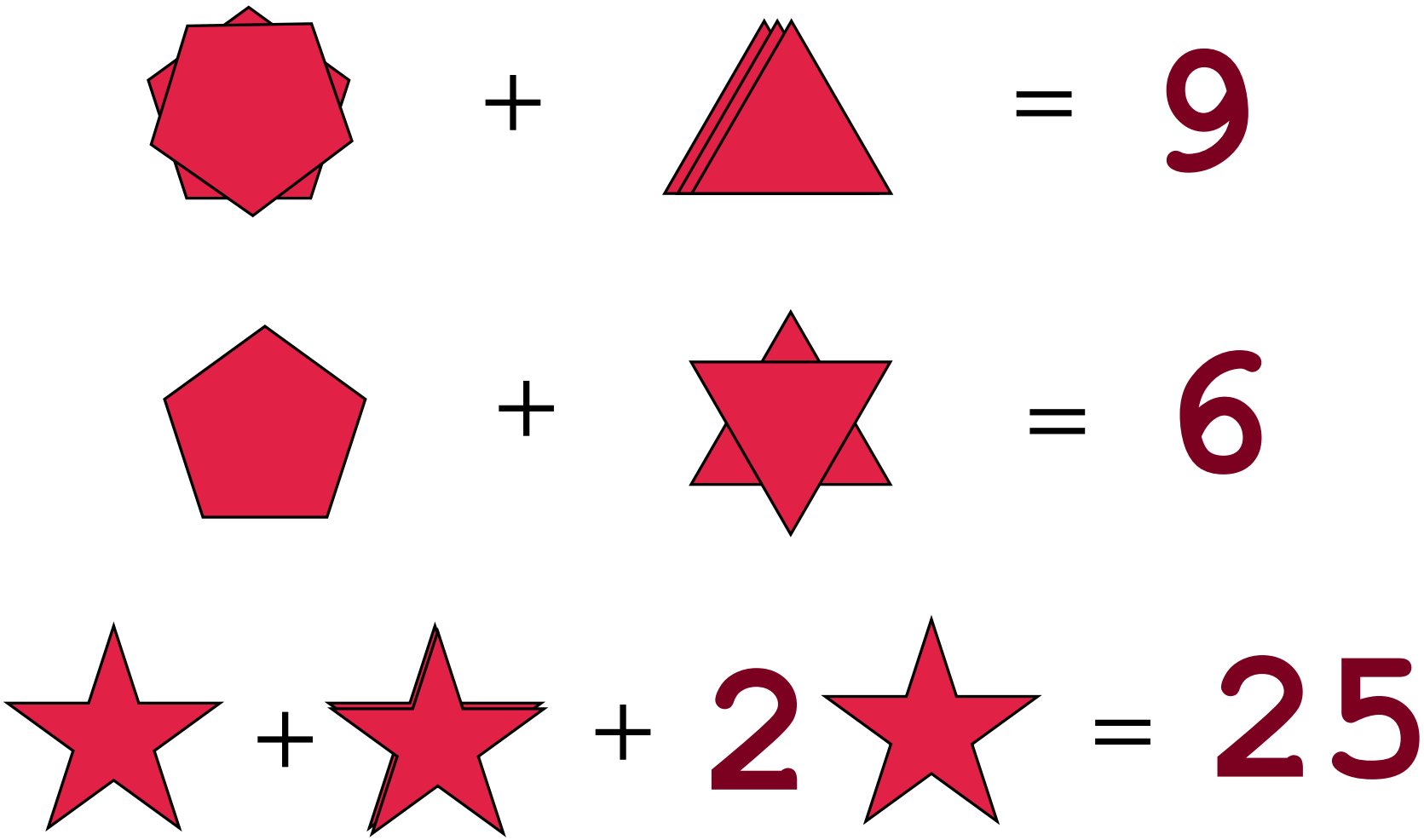
1. Only connect plugs that are adjacent (not including diagonally).
2. Do not connect plugs within the same region.
3. There must be the *correct* number of plugs in each row/column.
4. Each region is connected exactly once to all of its neighbouring regions.

An example schematic is shown below if there is any confusion:



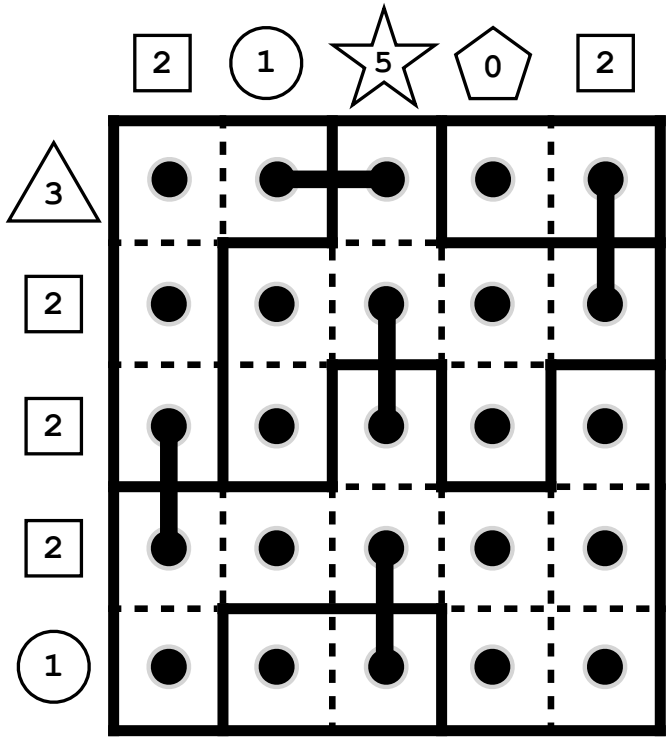
There is a 5×5 grid with several numbers labelled, but many missing. Each row and column of the grid forms an *arithmetic sequence*.
A sequence is arithmetic if each term after the first is obtained by adding the same constant to the previous term. For example: 2,4,6,8,10 is an arithmetic sequence.


+
=
20
+
=
9

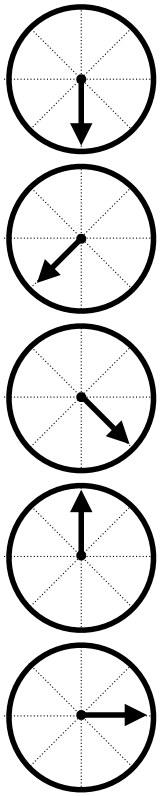

+
= 9
+
= 6
+
+ 2
= 25

5	25	100	15	125	16	28	64	144

Shade the buttons that are pressed

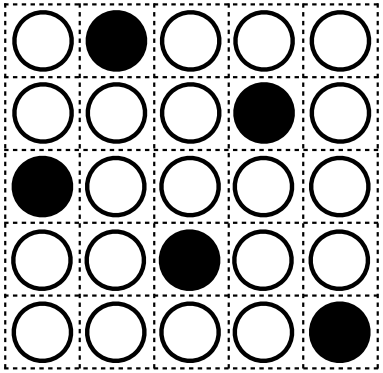


Connect the right plugs



Draw the correct Dial Positions

1	5	9	13	17
4	11	18	25	32
7	17	27	37	47
10	23	36	49	62
13	29	45	61	77



Shade the buttons that are pressed

Write the codes you enter

1. 77362575 2. 132527493747 3. 771131777