

#### AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES SCHOOLS ENRICHMENT CENTRE (AIMSSEC) AIMING HIGH

#### **MULTIPLES** is the theme

## for this INCLUSION AND HOME LEARNING GUIDE

## This Guide suggests related learning activities for all ages from 4 to 17+

Just choose whatever seems suitable for your group of learners

The PATH TO THE STARS activity was designed for YEARS 5 to 9

## PATH TO THE STARS



Is it possible to draw a 5-pointed star without taking your pencil off the paper?

Is it possible to draw a 6-pointed star in the same way without taking your pencil off? Remember that you shouldn't join points that are right next to each other and you can't go over the same line twice. Your lines must run straight from one point of the star to another. Try it!

What about 7-pointed and 8-pointed stars? What about a 4-pointed star? Have a go:



## HELP

Use the dotty circles on page 2 and draw some more circles of your own. Start with circles that have 7 dots. Number the dots 0, 1, 2, 3, 4, 5 and 6. Join every point to the point next to it until you get back to the starting point. Join 0 to 2 continue joining every alternate point until you get back to the start. Join 0 to 3 continue joining every third point until you get back to the starting point Join 0 to 4 continue joining every fourth point until you get back to the starting point Join 0 to 5 continue joining every fifth point until you get back to the starting point Join 0 to 6 continue joining every sixth point until you get back to the starting point What do you notice? Describe your patterns.

# NEXT

**Part 1:** Clocks, days of the week and seasons of the year all occur in repeating cycles. Investigate the connections between these cycles and the star patterns formed by joining dots on a circle.

**Part 2:** Use the sheet on page 3, shade squares containing multiples of 2, 3, 4, 5 etc on the number grids and investigate the patterns.

**Part 3**: Shade the grid shown here as follows:

- Put a circle around the number 2.
- Cross out all the other multiples of 2.
- Put a circle around the number 3.
- Cross out all the other multiples of 3.
- Put a circle around the number 5.
- Cross out all the other multiples of 5.
- Put a circle around the number 7.
- Cross out all the other multiples of 7.
- Now make a list of all the numbers that are NOT crossed out except the number 1.

| 2  | 2 3   |   | 5   | 6  | 7   | 8   | 9  | 10  |
|----|---|---|---|--|---|---|--|---|
| 12 | 13  | 14  | 15  | 16   | 17  | 18  | 19   | 20  |
| 22 | 23  | 24  | 25  | 26   | 27  | 28  | 29   | 30  |
| 32 | 33  | 34  | 35  | 36   | 37  | 38  | 39   | 40  |
| 42 | 43  | 44  | 45  | 46   | 47  | 48  | 49   | 50  |
| 52 | 53  | 54  | 55  | 56   | 57  | 58  | 59   | 60  |
| 62 | 63  | 64  | 65  | 66   | 67  | 68  | 69   | 70  |
| 72 | 73  | 74  | 75  | 76   | 77  | 78  | 79   | 80  |
| 82 | 83  | 84  | 85  | 86   | 87  | 88  | 89   | 90  |
| 92 | 93  | 94  | 95  | 96   | 97  | 98  | 99   | 100   |
|    | 2<br>12<br>22<br>32<br>42<br>52<br>62<br>72<br>82<br>92 | <ol> <li>2</li> <li>312</li> <li>122</li> <li>233</li> <li>322</li> <li>332</li> <li>422</li> <li>433</li> <li>522</li> <li>533</li> <li>622</li> <li>633</li> <li>722</li> <li>733</li> <li>823</li> <li>923</li> <li>933</li> </ol> | 234121314222324323334424344525354626364727374828384929394 | 2345121314152223242532333435424344455253545562636465727374758283848592939495 | 23456121314151622232425263233343536424344454652535455566263646566727374757682838485869293949596 | 2         3         4         5         6         7           12         13         14         15         16         17           22         23         24         25         26         27           32         33         34         35         36         37           42         43         44         45         46         47           52         53         54         55         56         57           62         63         64         65         66         67           72         73         74         75         76         77           82         83         84         85         86         87           92         93         94         95         96         97 | 2         3         4         5         6         7         8           12         13         14         15         16         17         18           22         23         24         25         26         27         28           32         33         34         35         36         37         38           42         43         44         45         46         47         48           52         53         54         55         56         57         58           62         63         64         65         66         67         68           72         73         74         75         76         77         78           82         83         84         85         86         87         88           92         93         94         95         96         97         98 | 2         3         4         5         6         7         8         9           12         13         14         15         16         17         18         19           22         23         24         25         26         27         28         29           32         33         34         35         36         37         38         39           42         43         44         45         46         47         48         49           52         53         54         55         56         57         58         59           62         63         64         65         66         67         68         69           72         73         74         75         76         77         78         79           82         83         84         85         86         87         88         89           92         93         94         95         96         97         98         99 |

What do you notice about the numbers on your list?



| 1  | 2  | 3  | 4  | 5    | 6   | 7    | 8  | 9  | 10  | 1  | 2              | 3  | 4   | 5    | 6   | 7    | 8  | 9  | 10             | 1  | 2  | 3  | 4   | 5    | 6   | 7    | 8  | 9  | 10  |
|----|----|----|----|------|-----|------|----|----|-----|----|----------------|----|-----|------|-----|------|----|----|----------------|----|----|----|-----|------|-----|------|----|----|-----|
| 11 | 12 | 13 | 14 | 15   | 16  | 17   | 18 | 19 | 20  | 1  | 12             | 13 | 14  | 15   | 16  | 17   | 18 | 19 | 20             | 11 | 12 | 13 | 14  | 15   | 16  | 17   | 18 | 19 | 20  |
| 21 | 22 | 23 | 24 | 25   | 26  | 27   | 28 | 29 | 30  | 2  | 22             | 23 | 24  | 25   | 26  | 27   | 28 | 29 | 30             | 21 | 22 | 23 | 24  | 25   | 26  | 27   | 28 | 29 | 30  |
| 31 | 32 | 33 | 34 | 35   | 36  | 37   | 38 | 39 | 40  | 31 | 32             | 33 | 34  | 35   | 36  | 37   | 38 | 39 | 40             | 31 | 32 | 33 | 34  | 35   | 36  | 37   | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45   | 46  | 47   | 48 | 49 | 50  | 4  | 42             | 43 | 44  | 45   | 46  | 47   | 48 | 49 | 50             | 41 | 42 | 43 | 44  | 45   | 46  | 47   | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55   | 56  | 57   | 58 | 59 | 60  | 5  | 52             | 53 | 54  | 55   | 56  | 57   | 58 | 59 | 60             | 51 | 52 | 53 | 54  | 55   | 56  | 57   | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65   | 66  | 67   | 68 | 69 | 70  | 6  | 62             | 63 | 64  | 65   | 66  | 67   | 68 | 69 | 70             | 61 | 62 | 63 | 64  | 65   | 66  | 67   | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75   | 76  | 77   | 78 | 79 | 80  | 7  | 72             | 73 | 74  | 75   | 76  | 77   | 78 | 79 | 80             | 71 | 72 | 73 | 74  | 75   | 76  | 77   | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85   | 86  | 87   | 88 | 89 | 90  | 8  | 82             | 83 | 84  | 85   | 86  | 87   | 88 | 89 | 90             | 81 | 82 | 83 | 84  | 85   | 86  | 87   | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95   | 96  | 97   | 98 | 99 | 100 | 9  | 92             | 93 | 94  | 95   | 96  | 97   | 98 | 99 | 100            | 91 | 92 | 93 | 94  | 95   | 96  | 97   | 98 | 99 | 100 |
|    |    | 1  | Mu | ltip | les | of 2 | 2  |    |     |    | -              | ]  | Mul | ltip | les | of 3 | 3  |    |                |    |    | ]  | Mu  | ltip | les | of   | 4  |    |     |
| 1  | 2  | 3  | 4  | 5    | 6   | 7    | 8  | 9  | 10  | 1  | 2              | 3  | 4   | 5    | 6   | 7    | 8  | 9  | 10             | 1  | 2  | 3  | 4   | 5    | 6   | 7    | 8  | 9  | 10  |
| 11 | 12 | 13 | 14 | 15   | 16  | 17   | 18 | 19 | 20  | 11 | 12             | 13 | 14  | 15   | 16  | 17   | 18 | 19 | 20             | 11 | 12 | 13 | 14  | 15   | 16  | 17   | 18 | 19 | 20  |
| 21 | 22 | 23 | 24 | 25   | 26  | 27   | 28 | 29 | 30  | 21 | 22             | 23 | 24  | 25   | 26  | 27   | 28 | 29 | 30             | 21 | 22 | 23 | 24  | 25   | 26  | 27   | 28 | 29 | 30  |
| 31 | 32 | 33 | 34 | 35   | 36  | 37   | 38 | 39 | 40  | 31 | 32             | 33 | 34  | 35   | 36  | 37   | 38 | 39 | 40             | 31 | 32 | 33 | 34  | 35   | 36  | 37   | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45   | 46  | 47   | 48 | 49 | 50  | 41 | 42             | 43 | 44  | 45   | 46  | 47   | 48 | 49 | 50             | 41 | 42 | 43 | 44  | 45   | 46  | 47   | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55   | 56  | 57   | 58 | 59 | 60  | 51 | 52             | 53 | 54  | 55   | 56  | 57   | 58 | 59 | 60             | 51 | 52 | 53 | 54  | 55   | 56  | 57   | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65   | 66  | 67   | 68 | 69 | 70  | 61 | 62             | 63 | 64  | 65   | 66  | 67   | 68 | 69 | 70             | 61 | 62 | 63 | 64  | 65   | 66  | 67   | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75   | 76  | 77   | 78 | 79 | 80  | 71 | 72             | 73 | 74  | 75   | 76  | 77   | 78 | 79 | 80             | 71 | 72 | 73 | 74  | 75   | 76  | 77   | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85   | 86  | 87   | 88 | 89 | 90  | 81 | 82             | 83 | 84  | 85   | 86  | 87   | 88 | 89 | 90             | 81 | 82 | 83 | 84  | 85   | 86  | 87   | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95   | 96  | 97   | 98 | 99 | 100 | 91 | 92             | 93 | 94  | 95   | 96  | 97   | 98 | 99 | 100            | 91 | 92 | 93 | 94  | 95   | 96  | 97   | 98 | 99 | 100 |
|    |    | ]  | Mu | ltip | les | of   | 5  |    |     |    | Multiples of 6 |    |     |      |     |      |    |    | Multiples of 7 |    |    |    |     |      |     |      |    |    |     |
| 1  | 2  | 3  | 4  | 5    | 6   | 7    | 8  | 9  | 10  | 1  | 2              | 3  | 4   | 5    | 6   | 7    | 8  | 9  | 10             | 1  | 2  | 3  | 4   | 5    | 6   | 7    | 8  | 9  | 10  |
| 11 | 12 | 13 | 14 | 15   | 16  | 17   | 18 | 19 | 20  | 11 | 12             | 13 | 14  | 15   | 16  | 17   | 18 | 19 | 20             | 11 | 12 | 13 | 14  | 15   | 16  | 17   | 18 | 19 | 20  |
| 21 | 22 | 23 | 24 | 25   | 26  | 27   | 28 | 29 | 30  | 21 | 22             | 23 | 24  | 25   | 26  | 27   | 28 | 29 | 30             | 21 | 22 | 23 | 24  | 25   | 26  | 27   | 28 | 29 | 30  |
| 31 | 32 | 33 | 34 | 35   | 36  | 37   | 38 | 39 | 40  | 31 | 32             | 33 | 34  | 35   | 36  | 37   | 38 | 39 | 40             | 31 | 32 | 33 | 34  | 35   | 36  | 37   | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45   | 46  | 47   | 48 | 49 | 50  | 41 | 42             | 43 | 44  | 45   | 46  | 47   | 48 | 49 | 50             | 41 | 42 | 43 | 44  | 45   | 46  | 47   | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55   | 56  | 57   | 58 | 59 | 60  | 51 | 52             | 53 | 54  | 55   | 56  | 57   | 58 | 59 | 60             | 51 | 52 | 53 | 54  | 55   | 56  | 57   | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65   | 66  | 67   | 68 | 69 | 70  | 61 | 62             | 63 | 64  | 65   | 66  | 67   | 68 | 69 | 70             | 61 | 62 | 63 | 64  | 65   | 66  | 67   | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75   | 76  | 77   | 78 | 79 | 80  | 71 | 72             | 73 | 74  | 75   | 76  | 77   | 78 | 79 | 80             | 71 | 72 | 73 | 74  | 75   | 76  | 77   | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85   | 86  | 87   | 88 | 89 | 90  | 81 | 82             | 83 | 84  | 85   | 86  | 87   | 88 | 89 | 90             | 81 | 82 | 83 | 84  | 85   | 86  | 87   | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95   | 96  | 97   | 98 | 99 | 100 | 91 | 92             | 93 | 94  | 95   | 96  | 97   | 98 | 99 | 100            | 91 | 92 | 93 | 94  | 95   | 96  | 97   | 98 | 99 | 100 |
|    |    |    | Mu | ltip | les | of   | 8  |    |     |    | 1              |    | Mul | tip  | les | of   | 9  |    |                |    |    | N  | And | tin  | es  | of 1 | 0  |    |     |

# **INCLUSION AND HOME LEARNING GUIDE**

# THEME: MULTIPLES

All these activities are connected so mixed-age groups can learn together at home. Older siblings learn from helping young ones. Young children can join in activities described for older learners such as the Making Stars People Maths activity with the string.

## Early Years and Lower Primary (age 5 to 8)

## **LET'S COUNT**

## Importantly – make this fun, do it often, and don't go on with it for long.

When children can confidently count to 20, next steps (in any order) are:

- Match number rods and sets of object to written numbers.
- Arrange the number rods in order with the written numbers alongside.
- Arrange written numbers in order without number rods.
- Count backwards from 20 to 1.
- **Clap counting**: everyone count 1 to 20 together clapping on 2, 4, 6, ...20
- **Clap counting**: count 1 to 20 together clapping on 2, 4, 6, ...20 but only whisper the odd numbers. The children can do actions with this e.g. jump when they clap.

#### *If they have done all the above in the past then next steps are:*

- Same again but counting to 30 (or higher)
- Clap counting on 3, 6, 9, ...with whispering on the other numbers.
- **Skip counting**: Start by ONLY counting multiples of 2 so they skip count 2, 4, 6, ... up to 20 or higher.
- **Clap and skip counting** other multiples.

#### JOIN POINTS TO MAKE STARS AND TALK ABOUT WHAT YOU NOTICE

| Join every alternate point    | Join every alternate point | Join every third point with a |
|-------------------------------|----------------------------|-------------------------------|
| with a straight line.         | with a straight line.      | straight line.                |
|                               |                            |                               |
| Join every third point with a | Join every alternate point | Join every third point with a |
| straight line.                | with a straight line.      | straight line.                |
|                               |                            |                               |

# **Upper Primary and Lower Secondary**

# **People Maths**

An activity for young learners to join in with older people. You need a group of 5 or more.)

Start with 5 people standing in a circle numbered 0, 1, 2, 3, and 4.

The ball of string is given to 0 who holds the end of the string and passes the ball to 1. After that the ball is passed around the circle, unrolling the string and pulling it taut. It goes from 0 to 1 to 2 to 3 to 4 then back to 0.

Ask what shape has been made (pentagon).

Ask 'what was the rule?' (pass to next person).

Now ask the group to start again.

0 passes the ball to 2 and it then goes to 4, then to 1 then to 3 then back to 0. What shape is this?

Ask 'what is the rule? (pass to every alternate person in the circle).

# Do the following with 8 dots on a circle or with a circle of 8 people if you have that many.

Stand in a circle.

Number the people 0, 1, 2, etc up to 7. The ball of string is given to 0 and then to 1, then 2 and passed around the circle, unrolling it and pulling it taut.

Ask what shape has been made (octagon). Ask 'what was the rule?' (pass to next person).



Now ask the group to start again. Pass the string from 0 to 2 to 4 and so on missing out one person each time until the string gets back to 0. Ask what shape has been made (square).

Now ask the group to start again. Pass the string from 0 to 3 to 6 and so on missing out two people each time until the string gets back to 0. Ask what shape has been made (star).

**Clapping on Multiples**. Do this for *at most* 10 minutes each day. This is an activity that can be done by 2 people or in a group. The purpose is to build understanding of multiples and common multiples, and to build confidence generally about number including multiplication facts and multiplication tables.

Everyone counts rhythmically 1, 2, 3, 4, 5... up to 30, clapping on the **multiples of 2**. Clap and speak loudly on the even numbers and don't clap and whisper on the odd numbers.

Next everyone counts and claps on the **multiples of 3** up to 30. Clap and speak loudly on the multiples of 3 and don't clap and whisper on all the other numbers.

Next you all count together, but one person or group claps on 2, 4, 6, 8, ... and the

other person or group on 3, 6, 9, 12, ... and you speak loudly or whisper as before. This is not easy, and you'll probably make mistakes, laugh about it and start again. Predict what you will hear. Which numbers will be loud? Why. This is a good way to learn about multiples and common multiples ('loud numbers') which are loud because they are multiples of **both 2 and 3**.

Choose other multiples. Repeat this activity. Each time predict what you will hear before you clap and talk about it afterwards. If you have three or more people together do this with one person clap-counting on multiples of 2, another on multiples of 3 and another on multiples of 5.

**Skip-counting. This is the next step after the clap-counting** and one of the ways to learn multiplication facts in an enjoyable way so that learners will ask "when can we do skip counting?" Do this for *at most* 10 minutes at a time as with clap-counting.

After doing clap-counting sufficiently often, learners will be confident about skipcounting in multiples of 2, counting 2, 4, 6,... and in multiples of 3, counting 3, 6, 9, ...both up to 30 and higher.

Over time your children can also do clap-counting for multiples of 4, 5, 6, ... up to multiples of 12. As their confidence grows, perhaps over several months, they will be able to count up to 100 and beyond. Ideally your children will be able to choose for themselves when to move onwards and upwards. For example, having done clap counting in multiples of 7 they might say "I can do skip counting in 7s now."

## **Key questions**

- Have you tried...
- What did you notice ...
- Can you explain ...
- What happens when you pass the string to the person next to you or join adjacent dots?
- Can you explain why it's impossible to join dots to make a 6-point star?
- Suppose you have 10 points around your circle. Which multiples will give stars and which do not?
- Suppose you have 12 points around your circle. Which multiples will give stars and which do not?
- What connection is there between star patterns for 12 points on a circle and a clockface?
- What connection is there between star patterns for 7 points on a circle and days of the week?

# SOLUTION

It is possible to draw a 5-pointed star without taking your pencil off the paper by joining every alternate dot. If you count around the circle 0, 1, 2, 3, 4 then joining every alternate dot means joining multiples of 2: 0, 2, 4, 1, 3, 0 -getting back to the start.

**This is 5-clock arithmetic on a 5 point clock.** Compare this to the 12-hour clock, the 7-day week and the 12-month year.

It is not possible to draw a **6-point sta**r without taking your pencil off the paper. By joining every alternate dot you get 2 triangles but you have to take your pencil off the paper. By joining a dot to the 3<sup>rd</sup> dot round the circle you get a diameter. It is impossible because 2 and 3 are factors of 6.



For a **7-point star** you can join multiples of 2 and multiples of 3 giving different stars. Multiples of 4 or 5 make the same stars joined by an anti-clockwise path.

0, 2, 4, 6, 8, 10, 12, 14 0, 3, 6, 9, 12, 15, 18, 21 0, 3, 6, 9, 12, 15, 18, 21, 24

Clock arithmetic

0, 2, 4, 6, 1, 3, 5, 0 0, 3, 6, 2, 5, 1, 4, 0 0, 3, 6, 1, 4, 7, 2, 5, 0

For **8** points join every 3<sup>rd</sup> dot to get an **8-point star**.

It is impossible to draw a **4-point star** as 2 is a factor of 4.

For **9 points you can draw 2 different stars**:

0, 2, 4, 6, 8, 10, 12, 14, 16, 18 and 0, 3, 6, 9, 12, 15, 18, 21, 24, 27

For n points you can draw stars joining multiples of any number that is not a factor of n.

## **Upper Secondary**

#### **Factors and Multiples Game**

https://aiminghigh.aimssec.ac.za/years-6-12-factors-and-multiples-game/

| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
|----|----|----|----|----|----|----|----|----|-----|
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20  |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30  |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

This is a game for one or two players. The first player chooses a positive even number that is less than 50 and crosses it out on the 100 square grid.

The second player chooses a number to cross out. The number must be a factor or multiple of the previous number.

Players continue to take it in turns to cross out numbers, at each stage choosing a number that is a factor or multiple of the number just crossed out by the other player.

The first person who is unable to cross out a number loses the game.

For one player, or as a class competition, follow the same rules and see who can make the longest chain of numbers.

Here is an interactivity for this game <u>on NRICH</u> where you can download a version to your own tablet or smartphone.

## Why do this activity?

This activity gives a simple introduction to ideas of factors and multiples. It builds on learners' understanding of counting in 2's or 3's or ... that is on knowledge of multiplication tables. It gives learners a concrete experience on which to base their mathematical reasoning about how to draw the stars, when it is possible and when not, and which multiplication tables to use. As an option, it can be related to, and explained by, clock arithmetic.

## Learning objectives

In doing this activity students will have an opportunity to develop understanding and fluency in the use of the language of factors, multiples and common multiples.

## **Generic competences**

In doing this activity students will have an opportunity to **develop visualization** and skill to interpret or create images to represent concepts.

## **DIAGNOSTIC ASSESSMENT** This can be done as a group as described below or the

question can be answered individually. Show this question and say:

- "Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D".
- 1. Notice how the learners respond. Ask them to explain why they gave their answer and DO NOT say whether it is right or wrong, simply thank the learner for the answer.
- 2. It is important for learners to explain the reason for their answer so that, by putting their thinking into words, they develop communication skills and gain a better understanding.
- 3. With a group, make sure that other learners listen to these reasons and try to decide if their own answer was right or wrong.
- 4. Ask the learners to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Look for a change and who gave right and wrong answers.

The correct answer is: d)

https://diagnosticquestions.com

## Follow up

#### Primary

Strip Patterns <u>https://aiminghigh.aimssec.ac.za/years-3-7-strip-patterns/</u> Multiple Patterns <u>https://aiminghigh.aimssec.ac.za/years-5-8-multiple-patterns/</u>

#### **Lower Secondary**

Prime Sieve <u>https://aiminghigh.aimssec.ac.za/years-6-9-prime-sieve/</u> Turning Cog Wheels <u>https://aiminghigh.aimssec.ac.za/years-6-10-turning-cogwheels/</u> Shifting Times Tables <u>https://aiminghigh.aimssec.ac.za/years-7-9-shifting-times-tables/</u> Factors and Multiples Game

#### **Upper Secondary**

Clock Arithmetic and Envelopes <u>https://aiminghigh.aimssec.ac.za/years-8-12-clock-arithmetic-and-envelopes/</u> Factors and Multiples Game <u>https://aiminghigh.aimssec.ac.za/years-6-12-factors-and-multiples-game/</u> Sum On <u>https://aiminghigh.aimssec.ac.za/years-10-12-sum-on/</u>



Go to the **AIMSSEC AIMING HIGH** website for lesson ideas, solutions and curriculum links: <u>http://aiminghigh.aimssec.ac.za</u> Subscribe to the **MATHS TOYS YouTube Channel** <u>https://www.youtube.com/c/mathstoys</u> Download the whole AIMSSEC collection of resources to use offline with

the AIMSSEC App see <u>https://aimssec.app</u> Find the App on Google Play.

