KEY STAGE 3

ORAL

AND

MENTAL

STARTERS

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn Term	ATTAINMENT TARGET: AT2 TOPIC: Integers, powers and roots
LEARNING OBJECTIVE: • Add and subtract positive and negative numbers	RESOURCE: Follow me cards

ACTIVITY:

Hand out cards

Time class to see if can improve next time

POSSIBLE EXTENSION:

I have Start Card Who has 3 - 5	I have -2 Who has -2 + 7
I have 5 Who has 5 - 9	I have -4 Who has -4 - 2
I have -6 Who has -6 + 12	I have 6 Who has 6 + 9
I have 15 Who has 15 - 16	I have -1 Who has -1 - 14

I have -15 Who has -15 + 7	I have -8 Who has -8 + 9
I have 1 Who has 1 - 11	I have -10 Who has -10 + 10
I have 0 Who has 0 - 14	I have -14 Who has -14 + 1
I have -13 Who has -13 + 20	I have 7 Who has 7 + 7

I have 14 Who has 14 - 2	I have 12 Who has 12 - 10
I have 2 Who has 2 - 13	I have -11 Who has -11 - 1
I have -12 Who has -12 + 20	I have 8 Who has 8 - 17
I have -9 Who has -9 + 18	I have 9 Who has 9 - 14

I have -5 Who has -5 + 9	I have 4 Who has 4 + 9
I have 13 Who has 13 - 20	I have -7 Who has -7 + 10
I have 3 Who has 3 + 8	I have 11 Who has 11 - 14
I have -3 Who has -3 + 13	I have 10 The End

I Have Cards – Negative Number Add/Subtract

	3 - 5
-2	-2 + 7
5	5 – 9
-4	-4 – 2
-6	-6 + 12
6	6 + 9
15	15 – 16
-1	-1 – 14
-15	-15 + 7
-8	-8 + 9
1	1 – 11
-10	-10 + 10
0	0 – 14
-14	-14 + 1
-13	-13 + 20
7	7 + 7
14	14 – 2
12	12 – 10
2	2 – 13
-11	-11 – 1
-12	-12 + 20
8	8 – 17
-9	-9 + 18
9	9 – 14
-5	-5 + 9
4	4 + 9
13	13 – 20
-7	-7 + 10
3	3 + 8
11	11 – 14
-3	-3 + 13
10	End

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn Term	ATTAINMENT TARGET: AT2 TOPIC: Mental methods and recall of numbers
LEARNING OBJECTIVE: • Add, subtract several small numbers or several multiples of 10	RESOURCE: • Numbers on card (large) • whiteboards

ACTIVITY:

Turn over 1 card at a time, from the pile, pupils have to remember and add the values
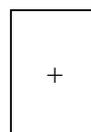
ie:

| 28 | + | 42 | + | 16 | = |

Display answer on whiteboards.

POSSIBLE EXTENSION:

As above but use:
• decimals
• simple fractions
• larger multiples of 10 ie, 780 + 360
• percentages

Could use a separate pile of cards with

| + | - |

turned over

between numbers.

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn Term	**ATTAINMENT TARGET:** AT2 **TOPIC:** Equations, formulae and identities
LEARNING OBJECTIVE: • Substitute positive integers into simple linear expressions • Apply mental skills to solve mental problems	**RESOURCE:** Follow me cards

ACTIVITY:

Distribute cards.

Display on board

$$a = 1, \qquad b = 2, \qquad c = 3, \qquad d = 6$$

Time class – try to beat this next time.

POSSIBLE EXTENSION:

Use expressions that contain terms such as a^2, a^3, etc

I have Start Card Who has a + b	I have 3 Who has d - b
I have 4 Who has 3d	I have 18 Who has 4c
I have 12 Who has 5a - c	I have 2 Who has 5d
I have 30 Who has 12b	I have 24 Who has 10c - b

I have 28 Who has 5b + 3c	I have 19 Who has 7a + 2b
I have 11 Who has 2d + a	I have 13 Who has 12b - c
I have 21 Who has 3d - b	I have 16 Who has c - b
I have 23 Who has 5d - c	I have 1 Who has 10b + c

I have 27 Who has 15b – 5a	I have 25 Who has 3c
I have 9 Who has a + b + c	I have 6 Who has 5b
I have 20 Who has 3d - a	I have 10 Who has 3d – 2b
I have 17 Who has 5c	I have 14 Who has 8c – 2a

I have 15 Who has d - a	I have 26 Who has 10c - a
I have 5 Who has 4b - a	I have 29 Who has b + d
I have 7 Who has 14a + 4b	I have 8 and this is the last card
I have 22 Who has 10b + d	

I Have Cards – Substitution

If a=1, b=2, c=3 and d=6

	a+b
3	d-b
4	3d
18	4c
12	5a-c
2	5d
30	12b
24	10c-b
28	5b+3c
19	7a+2b
11	2d+a
13	12b-c
21	3d-b
16	c-b
1	10b+c
23	5d-c
27	15b-5a
25	3c
9	a+b+c
6	5b
10	3d-2b
14	8c-2a
20	3d-a
17	5c
15	d-a
5	4b-a
7	14a+4b
22	10b+d
26	10c-a
29	b+d
8	

ORAL AND MENTAL STARTERS

YEAR: 7 Spring Term	ATTAINMENT TARGET: AT2
	TOPIC: Integers, powers and roots

LEARNING OBJECTIVE:	RESOURCE:
• Add and subtract integers. • Recall multiplication facts to 10x10	Follow me cards

ACTIVITY:

Distribute cards.

Time the class – try to beat it next time.

POSSIBLE EXTENSION:

I have Start Card Who has 6 x 2	**I** have 12 Who has 5 x 5
I have 25 Who has 4 + 4 + 6	**I** have 14 Who has 21 - 19
I have 2 Who has 8 + 9	**I** have 17 Who has 50 - 11
I have 39 Who has 20 - 9	**I** have 11 Who has 2 x 9

I have 18 Who has 15 + 7	I have 22 Who has 18 - 17
I have 1 Who has 3 x 3	I have 9 Who has 4 x 5
I have 20 Who has 14 + 17	I have 31 Who has 19 + 7
I have 26 Who has 1 + 2 + 4	I have 7 Who has 12 + 7

I have 19 Who has 10 + 11 + 12	I have 33 Who has 7 x 5
I have 35 Who has 4 + 2 - 3	I have 3 Who has 31 - 7
I have 24 Who has 11 + 5	I have 16 Who has 18 + 19
I have 37 Who has 30 - 3	I have 27 Who has 1 + 2 + 3 + 4

I have 10 Who has 3 x 10	I have 30 Who has 16 + 16
I have 32 Who has 5 + 8 - 7	I have 6 Who has 14 + 14
I have 28 Who has 11 + 10	I have 21 Who has 5 x 3
I have 15 Who has 18 + 11	I have 29 Who has 11 - 6

I have 5 Who has 17 + 17	I have 34 Who has 6 + 7
I have 13 Who has 17 - 13	I have 4 Who has 19 + 19
I have 38 Who has 16 - 8	I have 8 Who has 40 - 4
I have 36 Who has 6 + 7 + 10	I have 23 The End

I Have Cards – Easy Ones

start	6 x 2
12	5 x 5
25	4 + 4 + 6
14	21 – 19
2	8 + 9
17	50 – 11
39	20 – 9
11	2 x 9
18	15 + 7
22	18 – 17
1	3 x 3
9	4 x 5
20	14 + 17
31	19 + 7
26	1 + 2 + 4
7	12 + 7
19	10 + 11 + 12
33	7 x 5
35	4 + 2 – 3
3	31 – 7
24	11 + 5
16	18 + 19
37	30 – 3
27	1 + 2 + 3 + 4
10	3 x 10
30	16 + 16
32	5 + 8 – 7
6	14 + 14
28	11 + 10
21	5 x 3
15	18 + 11
29	11 – 6
5	17 + 17
34	6 + 7
13	17 – 13
4	19 + 19
38	16 – 8
8	40 – 4
36	6 + 7 + 10
23	Finish

ORAL AND MENTAL STARTERS

YEAR: 7 Spring Term	**ATTAINMENT TARGET:** AT2 **TOPIC:** Place value and adding integers
LEARNING OBJECTIVE: • Order and add integers	**RESOURCE:** A die

ACTIVITY:

Each student draws nine circles as below:

◯ ◯ ◯
◯ ◯ ◯
◯ ◯ ◯ +
‾‾‾‾‾‾‾
‾‾‾‾‾‾‾
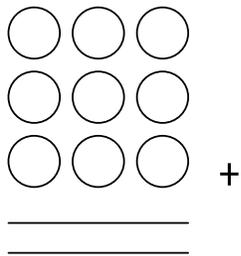
Teacher rolls die nine times. Each time a new number is called out, the students write the number in one of the circles. When all nine numbers have been called, the students add the numbers (in vertical columns).

The student to get the total nearest to 1000 wins.

POSSIBLE EXTENSION:

Other totals could be used such as smallest/largest total wins.

ORAL AND MENTAL STARTERS

YEAR: 7 Summer Term	ATTAINMENT TARGET: AT3
	TOPIC: Measure and mensuration

LEARNING OBJECTIVE:	RESOURCE:
• Estimate and order acute, obtuse and reflex angles	Board, ruler, protractor or OHP

ACTIVITY:

On board, OHP draw or have ready angles.
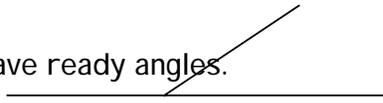
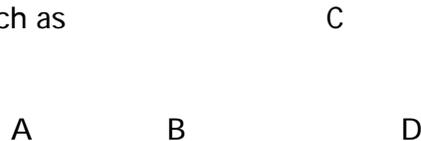On whiteboards pupils to record an estimate for the size of the marked angle.

One pupil to measure angle $\pm$ 10° 2 points

$\pm$ 20° 1 point

Repeat as necessary.

Opportunity to introduce labelling of angles by asking for an estimate of ∟ABC from a diagram such as   C

                    A   B   D

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn and Spring Terms	ATTAINMENT TARGET: AT2
	TOPIC: Place value, ordering and rounding

0.1	1	10	100	1000	RESOURCE:

Count on in steps of…

RESOURCE:
Cards

ACTIVITY:

10		0.1		1000

0.1   100

0.1

Shuffle the cards, place pile, face (create more than one of each if needed). One pupil is in charge of the he pupil is the '**Stop person**'.

One of the cards is turned over and the class start counting on in these amounts, i.e. if card is   then 100, 200, 300, 400, 500… until the '**Stop person**' says stop.
Another card is then turned over, say   , carry on counting for instance 400, 500, stop,   , 500.1, 500.2, 500.3 etc. Carry on, count up or back.

A sequence might be:
        , 20, stop,   , 30.1, 30.2, 30.3, stop,   , 1030.3, 2030.3…

POSSIBLE EXTENSION:

Use different count on, back amounts.

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn and Summer Terms	ATTAINMENT TARGET: AT4 TOPIC: Processing and representing data
LEARNING OBJECTIVE: • Apply mental skills to solve simple problems	RESOURCE: • Class whiteboards

ACTIVITY:

Using whiteboards to display the answer, pose questions such as:

• I am thinking of 5 numbers with a mean of 6, what could my 5 numbers be?

• Write down 4 numbers with a range of 4 and a mean of 5.

• Write down 5 numbers with a median of 7 and a range of 4.

• Write down a set of numbers with a mode of 6 and a median of 5.

POSSIBLE EXTENSION:

Questions such as the above that can't be answered.
Ask why can't they be answered.
Create algebraic sequences.

ORAL AND MENTAL STARTERS

YEAR: 7 Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Sequences, functions and graphs
LEARNING OBJECTIVE: • Discuss and interpret graphs	RESOURCE: • OHT • Flipchart paper • Labels: y-axis, x-axis, gradient, intercept, origin

ACTIVITY:

Using either a large piece of paper (flipchart?) or OHT, prepare a set of axis, as below:
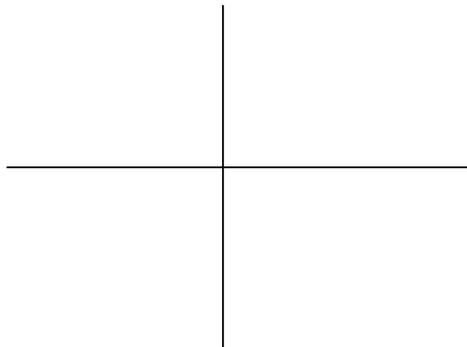
On this draw a straight line, or more than one. Ask pupils to discuss where the labels:

y-axis		x-axis		gradient		intercept		origin

should be placed.

POSSIBLE EXTENSION:

Careful questioning about gradient could lead to an extended discussion about slope, steepness, rate of change.

Possible extension: labels such as $y = 2x + 3x$ $y = 3 - 4x$

Or extension into quadratics, cubics.

ORAL AND MENTAL STARTERS

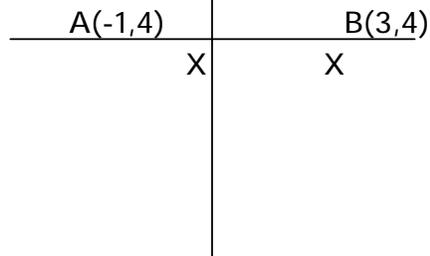| YEAR: 7 Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Coordinates

LEARNING OBJECTIVE: • Discuss and interpret graphs	RESOURCE:

ACTIVITY:

A(-1,4)   B(3,4)
    X   X

1. Plot/write down the coordinates of two points that could be plotted to form a square
2. Reflect B(3,4) in x or y axis, what are the coordinates of this new point?
3. AB for part of a straight line, write down the coordinates of another point that would be on this straight line. What is the equation of this line?

POSSIBLE EXTENSION:

Other shapes plotted, rectangles, trapezium, parallelogram etc.

ORAL AND MENTAL STARTERS

YEAR: 7 Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Coordinates
LEARNING OBJECTIVE: • Discuss and interpret graphs	RESOURCE: Paper squared White boards

ACTIVITY:

Using either graph paper, squared paper, prepared OHT, draw a set of axis, reinforce words axis, origin.

Pupils could sketch on white boards a set of axis.

Read out coordinates, that create a shape/picture. Discuss resulting shape.

POSSIBLE EXTENSION:

Set up axis to that shape is in all four quadrants.

Once axis visualised that task could be done as an imaginary task.

ORAL AND MENTAL STARTERS

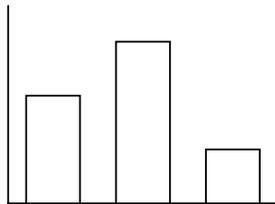| YEAR: 7 Spring and Summer Terms	ATTAINMENT TARGET: AT4
	TOPIC: Processing and representing data

LEARNING OBJECTIVE:	RESOURCE:
• Discuss and interpret graphs • Construct graphs to represent data	• OHT • whiteboards

ACTIVITY:

On the board or OHT draw a bar chart:

Discussing labelling, etc

Then on their whiteboards ask pupils to draw freehand a corresponding pie chart or vice versa.

Starting point from pie chart or bar chart needs to be such that the sectors/bars are reasonably nice, ie sectors such as 180°, 45°, 135° or heights of 6, 4, 2.

POSSIBLE EXTENSION:

More bars, sectors
Questioning about total number, mode, etc.

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	**ATTAINMENT TARGET:** AT1 **TOPIC:** Using and applying mathematics to solve problems
LEARNING OBJECTIVE: • Apply mental skills to solve simple problems	**RESOURCE:**

ACTIVITY:

On OHP/board, draw a number square to represent a telephone keypad.

1	2	3
4	5	6
7	8	9

Issue instructions such as, 'Start at 5, go down 1, right 1, up 2. What number are you on?'

Remove number square and pose questions such as, 'Start at 7, how can I get to 2? Is there another way?'

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

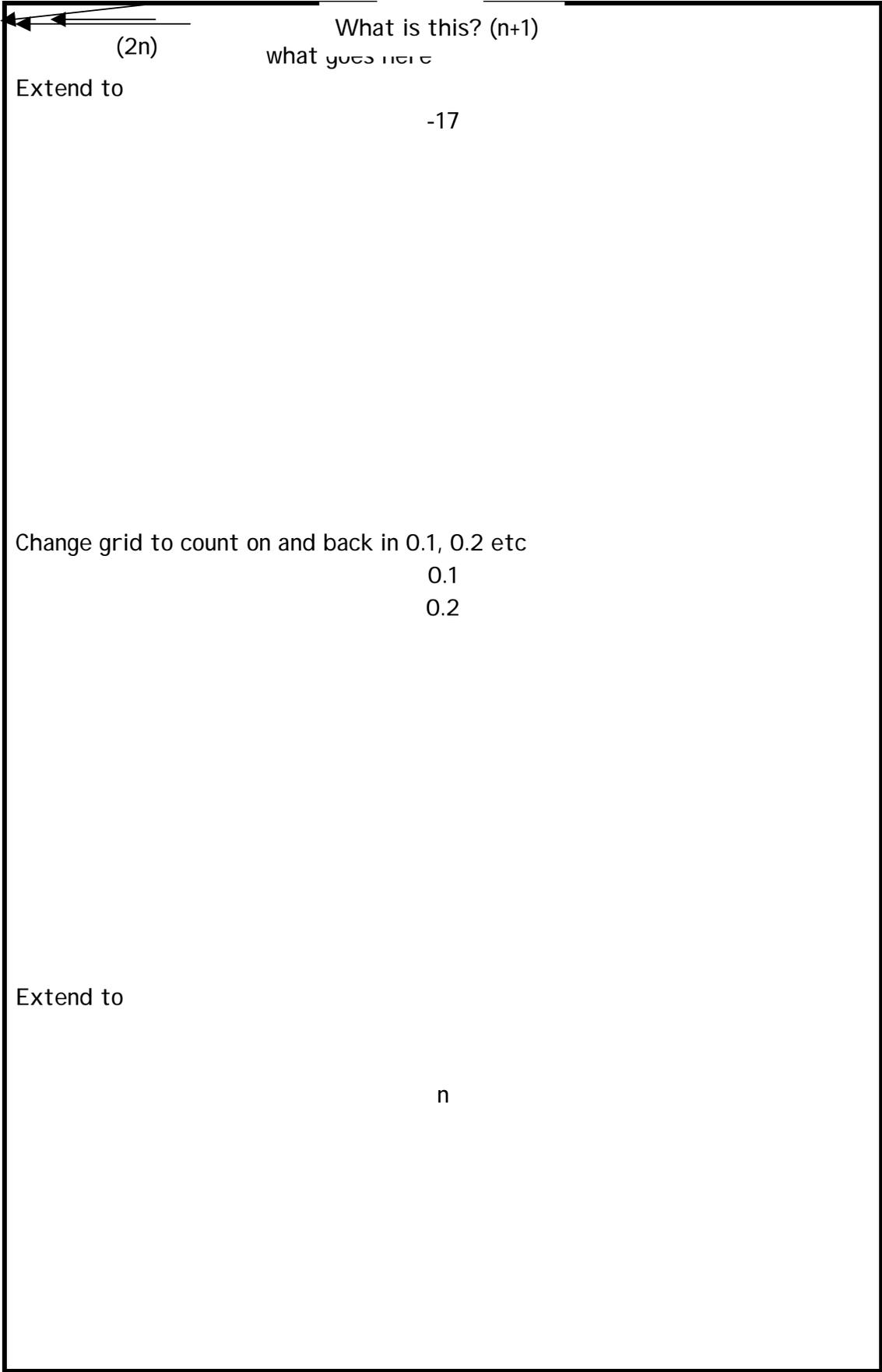| YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Mental methods and rapid recall of number facts.
LEARNING OBJECTIVE: • Find doubles and halves • Count on and back in 0.1, 0.2… • Apply mental skills to solve problems	RESOURCE:

ACTIVITY:

Draw a grid on the board

        1
        2
        3
        4
        5

Class to help fill in the bottom line by doubling the top.

Move grid to   what goes here
                17

(2n)

What is this? (n+1)

what goes here

Extend to

-17

Change grid to count on and back in 0.1, 0.2 etc

0.1

0.2

Extend to

n

Ask why at end of pupils' answers to clarify understanding.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS	
YEAR: 7 Autumn, Spring and Summer Terms	**ATTAINMENT TARGET:** AT2 **TOPIC:** Rapid recall of number facts
LEARNING OBJECTIVE: • Recall multiplication facts to 10 x 10	**RESOURCE:** Follow me cards x10 x2

ACTIVITY:

Distribute cards.

Time class – try to beat this next time.

POSSIBLE EXTENSION:

I have Start Card Who has 5 x 10	I have 50 Who has 4 x 10
I have 40 Who has 8 x 2	I have 16 Who has 9 x 10
I have 90 Who has 7 x 2	I have 14 Who has 11 x 10
I have 110 Who has 14 x 2	I have 28 Who has 9 x 2

I have 18 Who has 6 x 2	**I** have 12 Who has 3 x 10
I have 30 Who has 11 x 2	**I** have 22 Who has 12 x 10
I have 120 Who has 99 x 10	**I** have 990 Who has 32 x 2
I have 64 Who has 3 x 2	**I** have 6 Who has 7 x 10

I have 70 Who has 6 x 10	I have 60 Who has 21 x 2
I have 42 Who has 31 x 2	I have 62 Who has 15 x 10
I have 150 Who has 63 x 10	I have 630 Who has 45 x 10
I have 450 Who has 25 x 2	I have 50 Who has 22 x 2

I have 44 Who has 33 x 2	I have 66 Who has 100 x 2
I have 200 Who has 71 x 10	I have 710 Who has 41 x 2
I have 82 Who has 2 x 2	I have 4 Who has 5 x 2
I have 10 Who has 33 x 10	I have 330 Who has 61 x 10

I have 610 Who has 36 x 10	I have 360 Who has 42 x 2
I have 84 Who has 16 x 2	I have 32 Who has 200 x 2
I have 400 Who has 100 x 10	I have 1000 Who has 400 x 2
I have 800 Who has 34 x 10	I have 340 The End

I Have Cards   x10   x2

	5 x 10
50	4 x 10
40	8 x 2
16	9 x 10
90	7 x 2
14	11 x 10
110	14 x 2
28	9 x 2
18	6 x 2
12	3 x 10
30	11 x 2
22	12 x 10
120	99 x 10
990	32 x 2
64	3 x 2
6	7 x 10
70	6 x 10
60	21 x 2
42	31 x 2
62	15 x 10
150	63 x 10
630	45 x 10
450	25 x 2
50	22 x 2
44	33 x 2
66	100 x 2
200	71 x 10
710	41 x 2
82	2 x 2
4	5 x 2
10	33 x 10
330	61 x 10
610	36 x 10
360	42 x 2
84	16 x 2
32	200 x 2
400	100 x 10
1000	400 x 2
800	34 x 10
340	End

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Integers, powers and roots
LEARNING OBJECTIVE: - Know or derive quickly prime numbers less than 30 - Know or derive quickly squares to at least 12x12 and their corresponding roots.	**RESOURCE:** Follow me cards

ACTIVITY:

Distribute cards.

Time class – try to beat this next time.

POSSIBLE EXTENSION:

I have 35 Who has the prime number after 23?	I have 29 Who has the square of 11?
I have 121 Who has the largest prime under 20?	I have 19 Who has the square root of 169?
I have 13 Who has the square of 1?	I have 1 Who has the lowest prime number?
I have 2 Who has the square of 7?	I have 49 Who has the square root of 100?
I have 10 Who has a prime between 20 and 25?	I have 23 Who has 6 times 6?
I have 36 11, 13, 15 – which is not a prime number?	I have 15 What is the square root of 49?
I have 7 Who has the product of 8 and 8?	I have 64 Who has a square number between 10 and 20?
I have 16 Who has the square root of 9?	I have 3 Tell me the product of the first two primes

I have 6 Who has the square root of 25?	I have 5 Give an odd square number between 20 and 40
I have 25 Who has the square root of 144?	I have 12 Who has the square of 9?
I have 81 Who has the square root of 16?	I have 4 What is 64 the square of?
I have 8 7, 9, 11 – which is not a prime number?	I have 9 Who has the square root of 121?
I have 11 71, 81, 91 – which is a square number?	I have 81 Who has the square of 10?
I have 100 Who has a prime number above 13?	I have 17 23, 25, 27 – which is not prime or square?
I have 27 Who has the square of 12?	I have 144 35, 36, 37 – which is not prime or square?

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Integers, powers and roots
LEARNING OBJECTIVE: • Recognise and use multiples and factors	**RESOURCE:** Numbers to suit multiples, factors, etc

ACTIVITY:

Give prepared numbers to class, one per pupil.

Then...

• Stand up if 5 is a factor of your number

• Left arm up if your number is a multiple of 3, etc

POSSIBLE EXTENSION:

• Lowest common multiple.
• Highest common factor
• Prime numbers

ORAL AND MENTAL STARTERS

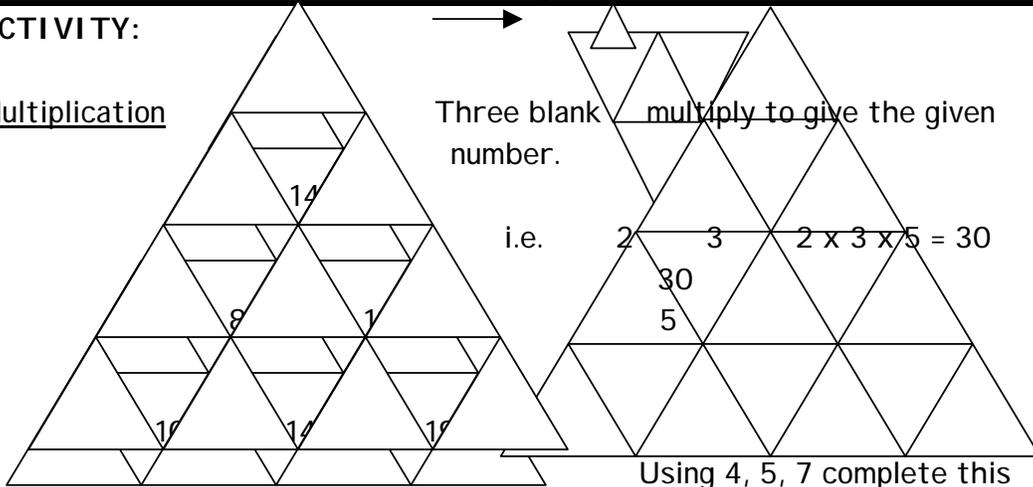| **YEAR:** 7 Autumn, Spring and Summer Terms	**ATTAINMENT TARGET:** AT2 **TOPIC:** Integers, power and roots
LEARNING OBJECTIVE: • Recognise and use multiples, factors, common factors, highest common factors, lowest common multiples, primes.	**RESOURCE:** Target board enlarged or an OHT (A3)

ACTIVITY:

Display the target board so that all class can see.

Then ask pupils to identify:
- A multiple of 5   why?
- A prime number   why? Or how do you know?
- An odd number
- A multiple of 3 and 5
- A square number
- Etc.

- asking for an explanation from the pupil who answers - why? Or how do they know?

POSSIBLE EXTENSION:

Change the target board to suit the needs of the topic.

25	30	44	16	22
41	52	31	28	12
34	37	45	11	48
17	9	36	33	51

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Integers, powers and roots
LEARNING OBJECTIVE: • Recognise multiples	RESOURCE:

ACTIVITY:

<u>Fizz buzz and extensions.</u>

Fizz buzz:
- For multiples of 3 the class/pupil says fizz
- For multiples of 5 the class/pupil says buzz

Circulate around the class starting with 1, 2, fizz, 4, buzz, etc. A wrong answer eliminates the pupil from the game.

Fizz, whiz, buzz:
Same idea but for multiples of 3, 4, 5

Fizz, whiz, buzz, bang:
Same idea but for 3, 4, 5, 6.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Integers, powers and roots
LEARNING OBJECTIVE: • Recognise & use multiples & factors • Apply mental skills to solve problems	**RESOURCE:** White boards

ACTIVITY:

Multiplication

14

8   1

10   14   18

Three blank   multiply to give the given number.

i.e.   2   3   2 x 3 x 5 = 30

30
5

Using 4, 5, 7 complete this Puzzle.

Addition – as above but adding 3, 4, 5

12

11   13

13   10   13

$3x + 1$

$3x + 1$ $3x + 3$
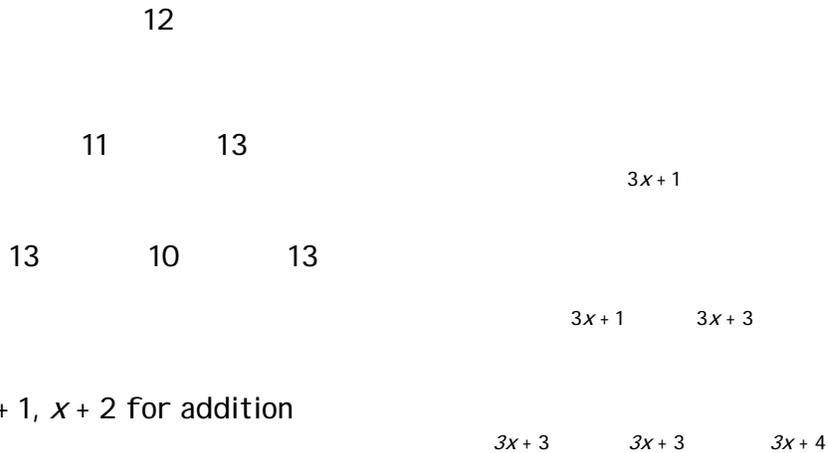
Using x, $x + 1$, $x + 2$ for addition

$3x + 3$ $3x + 3$ $3x + 4$

POSSIBLE EXTENSION:

Use algebra for addition x, $x + 1$, $x + 2$

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Calculations
LEARNING OBJECTIVE: • Add and subtract pairs of numbers • Find doubles and halves of numbers.	RESOURCE:

ACTIVITY:

x2		+26		÷2

On a board write a target number, for example 50.

From a starting number ask pupils to create a sum where the answer is the target number, i.e.

25   ,   24   ,   100   etc.

Depending on the group the target number can be altered to suit their needs and if necessary the operations allowed increased or decreased.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

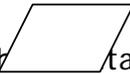| YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Geometrical reasoning: lines, angles and shapes
LEARNING OBJECTIVE: • Visualise, describe and sketch 2D shapes	RESOURCE: OHT, card

ACTIVITY:

Prepare an OHT with shapes drawn and names of shapes. (These can be cut up and arranged in different orders on an OHP).

Either:

•   Match shapes and names in pairs using all the cards,

Or:

•   Play like the memory game. All cards are covered by pieces of card. Player 1 removes two pieces of card if they are a match they keep them, if not replace the card and next players turn.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	**ATTAINMENT TARGET:** AT3 **TOPIC:** Geometrical reasoning: lines, angles and shapes
LEARNING OBJECTIVE: • Visualise, describe and sketch 2D shapes	**RESOURCE:** Bowler hat or non see-through container

ACTIVITY:

Put into container cards with shapes/properties etc depending on topic being covered.

Ask one pupil to remove a card and write on the board the content of the card, i.e.

Moving around the class ask pupils for properties/facts linked to the card drawn and record these on the board, i.e.

2 pairs of parallel lines "   "   parallelogram

"

quadrilateral

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Geometrical reasoning: lines, angles and shapes
LEARNING OBJECTIVE: • Visualise, describe and sketch 2D shapes	**RESOURCE:** • Cards with mathematical shapes on • whiteboards

ACTIVITY:

Sit pupils in pairs back-to-back, one with the card with the mathematical shape, the other with a whiteboard.

Two versions

1. Pupil with whiteboard asks questions to find information about the shape and use this to draw the shape. The person with the shape can't answer 'yes' or 'no'.
2. Person with the shape to use properties of the shape to describe the shape to the person drawing the shape without mentioning the mathematical name of the shape.

POSSIBLE EXTENSION:

Extend to meet the needs of the different classes, use of vocabulary etc.

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Convert one metric unit to another
LEARNING OBJECTIVE: • Convert between m, cm, mm, Km and m, Kg and g and litres and ml	RESOURCE: • Place value cards • OHP • Clear counters

ACTIVITY:

Use grid:

```
10000    ---------    90000
 1000                   -
  100                   -
   10                   -
    1                   -
   0.1                  -
  0.01                  -
 0.001                  -
0.0001   ----------   0.0009
```

Pupils to have a copy of grid and counters (preferably see through).

- What numbers do I need to cover to make 1.3?
- Where do I put them to make 1.3:   x 10?
  - x 100?
  - ÷ 10?
  - ÷ 100?
  - ÷ 100?

- Different starting numbers, different ÷ and x ...

POSSIBLE EXTENSION:

Extend the questions to take them outside either above or below the grid.

Create a grid to make this happen by limiting the top and bottom numbers ie;

```
100    -----    900
  -         -            or similar.
0.01   -----    0.09
```

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Measures and mensuration
LEARNING OBJECTIVE: • Estimate and order acute and obtuse angles	**RESOURCE:** Two different coloured circles

ACTIVITY:

Cut out two circles, each a different colour. Cut to the centre of each circle and fit together.
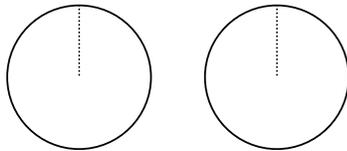
Turn to reveal an angle, ask for information on the angle shown:

• bring out name, acute, obtuse, right angle – reflex as extension

• estimate of size

• range of angles represented by acute, etc

POSSIBLE EXTENSION:

Extend to work on :   -   angles around a point
                          -       angles on a straight line

ORAL AND MENTAL STARTERS

YEAR: 8 Autumn Term	ATTAINMENT TARGET: AT3
	TOPIC: Geometrical reasoning: lines, angles and shapes

LEARNING OBJECTIVE:	RESOURCE:
• Identify alternate angles and corresponding angles • Estimate and order acute, obtuse and reflex angles	Whiteboards

ACTIVITY:

Ask pupils on their whiteboards to draw a pair of parallel lines with a transverse intersecting line and then mark:

   i)   a pair of alternate angles

   ii)   a pair of corresponding angles

   iii)   a pair of supplementary angles

OR on board/OHP draw   and ask similar questions.
Need to include a   question to begin with about parallel lines and how they are indicated etc.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 8 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT4 TOPIC: Interpreting and discussing results
LEARNING OBJECTIVE: • Discuss and interpret graphs • Simple scatter graphs	RESOURCE: • OHT

ACTIVITY:

Draw a simple scatter graph
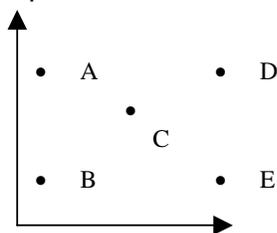
Interrogate the graph using weight questions such as:
- Who is tall and heavy? – How do you know?
- Who is short and heavy? – How do you know?
- How would you describe person C?

Etc.

The points could represent animals it necessary.

Other combinations could be duration of phone call/cost, height/age

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 9 Autumn, Spring and Summer Terms	**ATTAINMENT TARGET:** AT2 **TOPIC:** Sequences, functions and graphs
LEARNING OBJECTIVE: • Discuss and interpret graphs	**RESOURCE:**

ACTIVITY:

Drawing a line graph distance/time

Describe what happens in the race for each of the three runners.

Possible questions:
When does --- stop?
At which point on the graph is the runner moving faster? How do you know? Etc.

Distance

B   C

A

Time
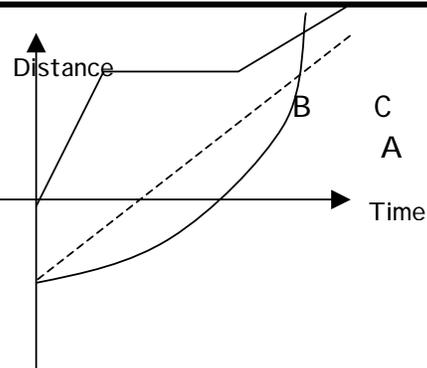
POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 9 Spring and Summer Terms	ATTAINMENT TARGET: AT4 TOPIC: Probability

LEARNING OBJECTIVE: • Solve simple problems involving probabilities	RESOURCE: Two dice

ACTIVITY:

Probability bingo

Pupils set out a 3x4 grid on paper:
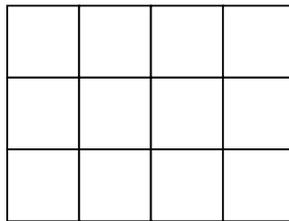
Fill each square with a number between 2 and 12. Numbers can be repeated.

Roll dice, add the two numbers together – call out answer.

Pupils cross out this number if it is in their grid.

Keep a record of the numbers to check winner.

Bingo is called when all the squares have been completed.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn and Summer Terms 8 Autumn and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Fractions, decimal and percentage
LEARNING OBJECTIVE: • Convert between fractions, decimals and percentages	RESOURCE: Follow me cards

ACTIVITY:

Distribute cards.

Time class – try to beat this next time.

POSSIBLE EXTENSION:

I have 2/3 Who has a fraction equivalent to 3/4?	I have 21/28 Who has a percentage equivalent to 3/10
I have 30% Who has a fraction equivalent to 0.7?	I have 14/20 Who has a decimal equivalent to 1/5?
I have 0.2 Who has 0.2 as a percentage?	I have 20% Who has 60% as a fraction?
I have 3/5 Who has 11/20 as a percentage?	I have 55% Which is greater 15/20 or 0.8?
I have 0.8 Who has a fraction equivalent to 2/5?	I have 10/25 Who has 10/25 as a percentage?
I have 40% Who has the bigger fraction of 13/20 and 6/10?	I have 13/20 Who has 3/4 as a percentage?
I have 75% Who has 9/10 as a decimal?	I have 0.9 Who has 0.9 as a fraction
I have 27/30 Who has 1/20 as a percentage?	I have 5% Who has a fraction equivalent to 0.5?

I have 16/32 Who has a decimal equal to 70%?	I have 0.7 Who has 4/5 as a percentage?
I have 80% Who has 40% as a decimal?	I have 0.4 Who has a fraction equivalent to 16/20?
I have 4/5 Who has a decimal equal to 1/4?	I have 0.25 Who has 60% as a decimal?
I have 0.6 Who has a fraction equivalent to 15/100?	I have 3/20 Who has a decimal equivalent to 6/20?
I have 0.3 Who has the percentage equivalent to 0.9?	I have 90% Who has the percentage for 12 out of 48?
I have 25% Who has a fraction equivalent to 1/5?	I have 2/10 Which is bigger 60% or 2/3?

ORAL AND MENTAL STARTERS

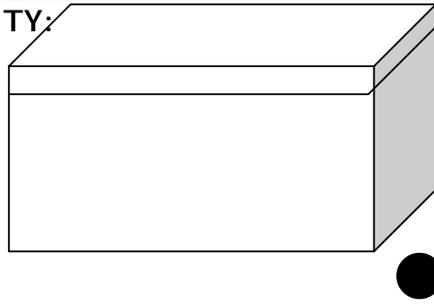| YEAR: 7 Summer Term 8 Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Geometrical reasoning: lines, angles and shapes
LEARNING OBJECTIVE: Visualise and describe 3D shapes	RESOURCE: Box 3D shapes

ACTIVITY:

Mystery box full of 3D shapes

Pupil puts hand in box, describes the shape using correct mathematical vocabulary.
Class has to guess the shape.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT1 TOPIC: Solving problems
LEARNING OBJECTIVE: • Apply mental skills to solve problems	RESOURCE:

ACTIVITY:

The vulture and the mouse.

Imagine a turnstile, there is a vulture above, looking down, and a mouse below looking up.

The turnstile turns, in which direction do they see it turning?

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 8 (able) Autumn, Spring and Summer Terms 9 (able) Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT1 TOPIC: Using and applying mathematics to solve problems
LEARNING OBJECTIVE: • Apply mental skills to solve problems	RESOURCE:

ACTIVITY:

Setting the scene:

An insurance salesman calls at a house, woman answers door, says she is interested in buying insurance but to test how good the salesman is at his job asks him to solve this problem:

He is to work out the ages of her three children given the product of their ages is 36. He said he needed more information so she said the sum of their ages was equal to the number of the house next door. He jumps over the fence, looks at the number, comes back and says he still needs another piece of information. She says the eldest child plays the piano.

Can you work out the ages of the children?

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

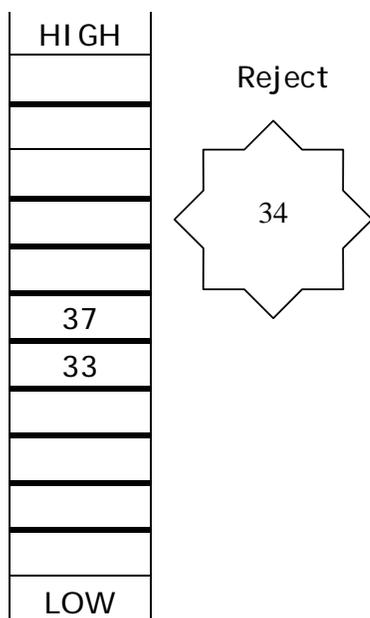| YEAR: 7 Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Place value, ordering and rounding
LEARNING OBJECTIVE: • Order integers	RESOURCE: Calculator to generate random numbers

ACTIVITY:

Draw a ladder with 10 spaces and a reject box.

HIGH

Reject

34

37

33

LOW

Decide on number range, eg 1 – 50.

Generate random numbers and call them out.

Students should place numbers on the ladder in order.

If there is not a space on the ladder the number goes in to the reject box.

The winner is the student who is successful in placing the numbers in order in the ladder.

POSSIBLE EXTENSION:

This can be extended into decimal numbers.

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn Term	**ATTAINMENT TARGET:** AT2 **TOPIC:** Integers, powers and roots
LEARNING OBJECTIVE: • Add and subtract pairs of numbers • Multiply and divide a two digit number by a one digit number • Know or derive quickly squares to at least 12x12 and the corresponding roots	**RESOURCE:** 5x5 grid full of random numbers

ACTIVITY:
Boggle

Set a target number eg, 24.

Use any operations to make 24 in as many different ways as possible, using the random numbers in the grid.

Scoring can be done as appropriate to the group ability,

eg;   1 point for 24's
       2 points for using all four operations
       5 points for using square or square root
       10 points for using all the numbers.

POSSIBLE EXTENSION:

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn and Summer Terms 8 Autumn Term 9 Autumn and Summer Terms	**ATTAINMENT TARGET:** AT2 **TOPIC:** Fractions, decimals, percentages, ratios and proportion
LEARNING OBJECTIVE: • Finding fractions and percentages of a quantity	**RESOURCE:** • OHP • Whiteboards

ACTIVITY:

On the board/OHP put a target number such as 240 and asks for answers to questions:

- 10% of
- 1% of
- 20% of
- ¾ of
- ½ of
- ¼ of, etc.

Record on board.

POSSIBLE EXTENSION:

Decimal quantities of the target amount. The starting point can be a quantity, £360, 20kg, etc
Use a target percentage such as 10% then write numbers such as 310, 16.3, 14, …. They have to write 10% of it. Alternatively write 10% they have to write 100%, ie 3.1 = 10%, 31 = 100%.

ORAL AND MENTAL STARTERS

YEAR: 7 Summer Term 8 Autumn Term 9 Autumn Term	**ATTAINMENT TARGET:** AT2 **TOPIC:** Fractions, decimals, ratio and proportion
LEARNING OBJECTIVE: • Find percentages of quantities	**RESOURCE:** Follow me cards

ACTIVITY:

Distribute cards (all the cards are 10% of a quantity).

Time the class – try to beat it next time.

POSSIBLE EXTENSION:
Make a set of cards with different percentages, eg, 20%, 25%, 50%, etc.

I have Start Card Who has 10% of £20	I have £2 Who has 10% of £40
I have £4 Who has 10% of £70	I have £7 Who has 10% of £90
I have £9 Who has 10% of £200	I have £20 Who has 10% of £220
I have £22 Who has 10% of £300	I have £30 Who has 10% of £350

I have £35 Who has 10% of £320	I have £32 Who has 10% of £450
I have £45 Who has 10% of £380	I have £38 Who has 10% of £700
I have £70 Who has 10% of £760	I have £76 Who has 10% of £650
I have 65 Who has 10% of £900	I have £99 Who has 10% of £680

I have £68 Who has 10% of £140	I have £14 Who has 10% of £830
I have £83 Who has 10% of £30	I have £3 Who has 10% of £60
I have £6 Who has 10% of £50	I have £5 Who has 10% of £80
I have £8 Who has 10% of £100	I have £10 The End

I Have Cards   10%

Start	10% of £20
2	10% of £40
4	10% of £70
7	10% of £90
9	10% of £200
20	10% of £220
22	10% of £300
30	10% of £350
35	10% of £320
32	10% of £450
45	10% of £380
38	10% of £700
70	10% of £760
76	10% of £650
65	10% of £990
99	10% of £680
68	10% of £140
14	10% of £830
83	10% of £30
3	10% of £60
6	10% of £50
5	10% of £80
8	10% of £100
10	The End

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	**ATTAINMENT TARGET:** AT2 **TOPIC:** Mental methods and rapid recall of number facts
LEARNING OBJECTIVE: • Recall multiplication facts to 10x10	**RESOURCE:** Four in a row sheet Counters

ACTIVITY:

Working in pairs; take it in turns to choose two numbers from the list below.

Multiply your two numbers together and place a counter on the answer.

The first player to get four counters in a row is the winner.

3	5	8	10	4
7	9	1	9	2

You must tell your opponent which two numbers you are multiplying.

POSSIBLE EXTENSION:

24	5	14	70	45	32
4	8	28	15	56	40
35	50	6	48	16	18
80	54	90	3	30	42
7	10	36	27	9	2
63	12	20	21	60	72

ORAL AND MENTAL STARTERS

YEAR:	7 Autumn, Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Mental methods and rapid recall of number facts

LEARNING OBJECTIVE:
- Recall multiplication and division facts to 10x10

RESOURCE:
Follow me cards

ACTIVITY:

Distribute cards.

Time the class – try to beat this next time.

POSSIBLE EXTENSION:

I have Start Card Who has 5 x 4	I have 20 Who has 2 x 9
I have 18 Who has 3 x 5	I have 15 Who has 4 x 7
I have 28 Who has 45 ÷ 9	I have 5 Who has 36 ÷ 4
I have 9 Who has 64 ÷ 2	I have 32 Who has 3 x 8

I have 24 Who has 27 x 2	I have 54 Who has 13 x 3
I have 39 Who has 48 ÷ 6	I have 8 Who has 7 x 2
I have 14 Who has 14 x 3	I have 42 Who has 6 x 8
I have 48 Who has 4 x 4	I have 16 Who has 28 ÷ 7

I have 4 Who has 36 ÷ 12	I have 3 Who has 25 x 4
I have 100 Who has 7 x 7	I have 49 Who has 9 x 7
I have 63 Who has 35 ÷ 5	I have 7 Who has 83 ÷ 83
I have 1 Who has 9 x 4	I have 36 Who has 17 x 2

I have 34 Who has 23 x 3	I have 69 Who has 24 ÷ 4
I have 6 Who has 44 ÷ 22	I have 2 Who has 48 ÷ 4
I have 12 Who has 39 ÷ 3	I have 13 Who has 8 x 8
I have 64 Who has 77 ÷ 7	I have 11 Who has 9 x 3

I have 27 Who has 6 x 5	I have 30 Who has 60 ÷ 6
I have 10 Who has 8 x 7	I have 56 Who has 13 x 5
I have 65 Who has 88 ÷ 4	I have 22 Who has 93 ÷ 3
I have 31 Who has 8 x 9	I have 72 The End

I Have Cards – Multiply and Divide

	5 x 4
20	2 x 9
18	3 x 5
15	4 x 7
28	45 ÷ 9
5	36 ÷ 4
9	64 ÷ 2
32	3 x 8
24	27 x 2
54	13 x 3
39	48 ÷ 6
8	7 x 2
14	14 x 3
42	6 x 8
48	4 x 4
16	28 ÷ 7
4	36 ÷ 12
3	25 x 4
100	7 x 7
49	9 x 7
63	35 ÷ 5
7	83 ÷ 83
1	9 x 4
36	17 x 2
34	23 x 3
69	24 ÷ 4
6	44 ÷ 22
2	48 ÷ 4
12	39 ÷ 3
13	8 x 8
64	77 ÷ 7
11	9 x 3
27	6 x 5
30	60 ÷ 6
10	8 x 7
56	13 x 5
65	88 ÷ 4
22	93 ÷ 3
31	8 x 9
72	

ORAL AND MENTAL STARTERS

YEAR: 7 Spring & Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT2 TOPIC: Algebra – Sequences, functions and graphs

LEARNING OBJECTIVE:
• Discuss and interpret graphs
• Plot graphs of simple linear functions
	RESOURCE:
	• OHP/large squared paper
	• Axis drawn on squared paper
	• Coloured counters
	• Labels – intercept
	      x-axis
	      y-axis
	      gradient
	      origin

ACTIVITY:

On either an OHP or large squared paper draw a set of axis.
Ask pupils by the use of counters, crosses to create one of the following graphs

Y = 2x
Y = 2x+1
Y = 2x-3
Etc
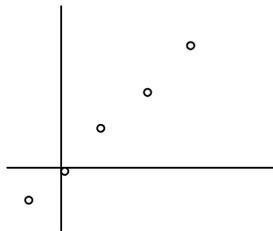
Use pre-prepared labels to focus on vocabulary by sticking on completed graph.

POSSIBLE EXTENSION:

Y9 ⟶ quadratics etc

ORAL AND MENTAL STARTERS

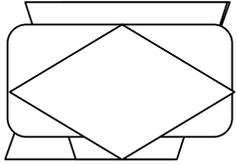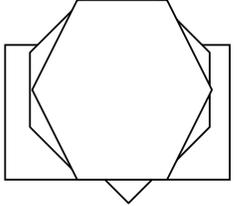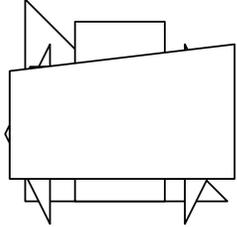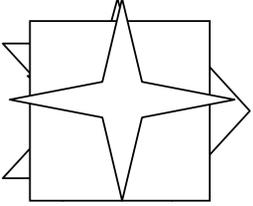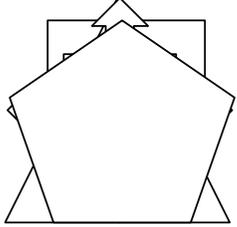| YEAR: 7 Autumn, Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT3 TOPIC: Geometrical reasoning: shapes
LEARNING OBJECTIVE: • Visualise, describe and sketch 2D shapes	**RESOURCE:** Shapes target board

ACTIVITY:

Questions: Which shapes are: quadrilaterals?
octagons?
isosceles triangles?
parallelograms?

Which shapes have: obtuse angles?
four right angles?
two lines of symmetry?
etc.

POSSIBLE EXTENSION:

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

ORAL AND MENTAL STARTERS

YEAR: 7 Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT4 TOPIC: Interpreting and discussing results
LEARNING OBJECTIVE: • Discuss and interpret graphs	**RESOURCE:** • Copies of graphs on OHT

ACTIVITY:

Using copies from Section 4, pages 268/9 of the Frameworks.

Using similar questions to those asked, interrogate the graphs.

POSSIBLE EXTENSION:

As above but with graphs from other sources, newspapers, etc.

ORAL AND MENTAL STARTERS

YEAR: 7 Autumn, Spring and Summer Terms 8 Autumn, Spring and Summer Terms 9 Autumn, Spring and Summer Terms	ATTAINMENT TARGET: AT1 TOPIC: Solve problems
LEARNING OBJECTIVE: • Apply mental skills to solve simple problems	**RESOURCE:**

ACTIVITY:

Target 34.

Choose a total, eg 34.

Play on the board against the student or have two students playing against each other. Choose a maximum number, eg 6. Each player can choose a number from 1 – 6 and add it on to the previous number. The winner is the player who gets to the target 34. Initially the student will think it is 'magic' that you always win, but should realise that there is a strategy here.

POSSIBLE EXTENSION:

The target and maximum values can be changed.

Make your own follow me cards:

I have Who has	I have Who has
I have Who has	I have Who has
I have Who has	I have Who has
I have Who has	I have Who has