2023

Maths SATS

Getting to GDS

Which year?

KS2 Maths SATs papers analysis Percentage of questions from each year group curriculum across Arithmetic and Reasoning					
Year	**2016**	**2017**	**2018**	**2019**	**2022**
3	16	7	9	10	8
4	17	26	18	21	23
5	27	25	26	21	32
6	43	41	47	47	37

Arithmetic Test

Arithmetic 2019	
Year 3	4
Year 4	9
Year 5	6
Year 6	21
Total	**40**

Arithmetic 2022	
Year 3	2
Year 4	11
Year 5	6
Year 6	21
Total	**40**

Detailed breakdown of topics required for SATs Arithmetic paper

Topic			Marks /40		
Four operations	Addition / subtraction	Addition / subtraction	3	8	28
		Missing number	2		
		Decimals	3		
	Multiplication / division	Using known facts	6	19	
		Short division	1		
		Long division	4		
		Short multiplication	1		
		Long multiplication	4		
		Multiplication / Division by 10, 100, 1000	3		
	BIDMAS		1		
Fractions & Percentages	Fractions	Addition / subtracting proper fractions	3	9	12
		Addition / subtracting mixed numbers	3		
		Fraction of amount	2		
		Fractions divided by integer	1		
	% of amount		3		

Missing topics from this Year 6 arithmetic test

- multiplying a fraction by a fraction;
- multiplying a mixed number by an integer.

Questions of the same type appeared several times in the test but with increasing difficulty.

27 | 15% of 3,200 =

28 | 2% of 3,000 =

30 | 80% of 115 =

Sophie Bartlett

Crafty Questions

36 $\frac{4}{5} \times 400 =$

3 $10 + \square = 302$

14 $500{,}000 - 5{,}000 =$

23 $8 - 5.123 =$

4 $\square + 5 = 341$

12 $602 - \square = 594$

34 $10 - 2\frac{1}{4} =$

More able children frequently make careless errors on the more basic questions

What do these have in common?

2 | $0 \times 989 =$

19

$$\begin{array}{r} 607 \\ \times \quad 83 \\ \hline \end{array}$$

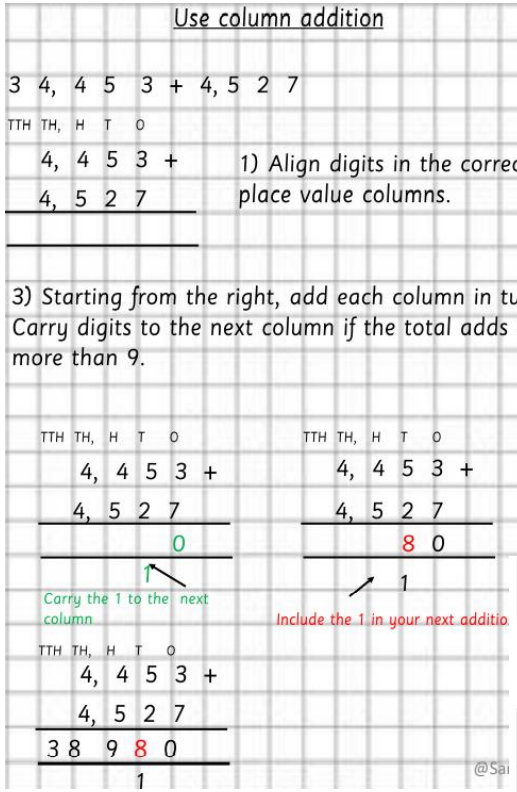
29

$$73\overline{)3066}$$

33

$$\begin{array}{r} 4078 \\ \times \quad 67 \\ \hline \end{array}$$

ARITHMETIC



Questions 1, 19 and 31 (sheet 4)

1) 6,130,100 + 7,953,669

2) 76,742 + 71,817

3) 488,290 + 173,624

4) 6,241,067 + 6, 912,765

5) 41,473 + 59,778

6) 981,250 + 596,244

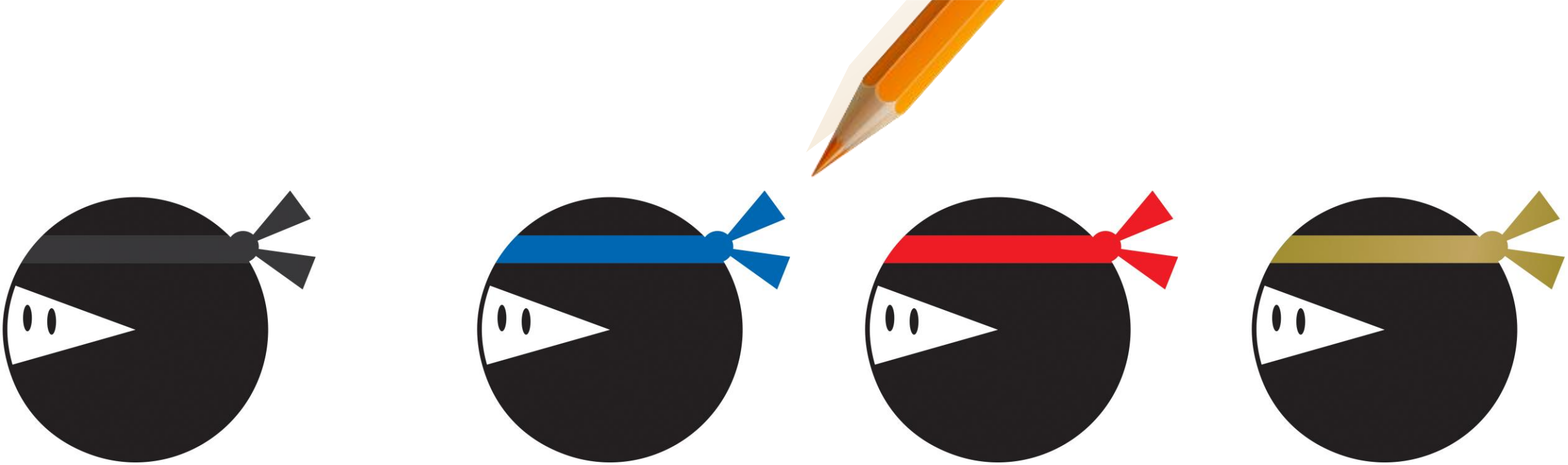
Donate a book to her school – link on her twitter feed/blog

Year 6
Arithmetic practice test 4

Name:_____
Date:_____

1	4531 + 100			1
2	583 –453			1
3	__ + 41 = 74			1
4	44 - __ = 27			1
5	50 x 300			1
6	$\frac{1}{5} + \frac{1}{5}$			1
7	89 ÷ 100			1
8	4^2			1
9	0.7 + 0.7			1

10	613 x 4			1
11	2841÷3			1
12	0.06– 0.06			1
13	$6\frac{7}{10} - 3\frac{2}{3}$			1
14	588 ÷ 42			2
15	170 ÷ 34			2
16	$\frac{4}{10} - \frac{1}{3}$			1
17	5.7 x 5.6			1
18	323,672-121,882			1



Numeracy Ninja

30 Questions

- Mental Strategies

- Timestables

- Key Skills

-PowerPoint ready prepared

-Timer built in

- FREE!

NUMERACY NINJAS 5 MINUTE SKILL CHECK

WEEK 1 SESSION 1 - Answer as many questions as you can in 5 mins

MENTAL STRATEGIES - do these in your head

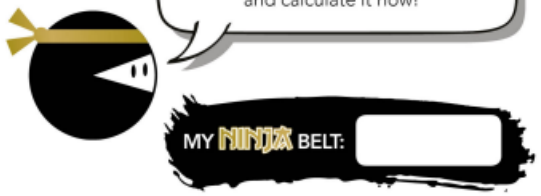
Q	Question	Answer
1	2 + 3	
2	89 + 11	
3	What is half of 6?	
4	125 – 10	
5	177 + □ = 270	
6	53 = 23 + □	
7	805 – 804	
8	4 × 1 = 4, so 4 ÷ 4 = □	
9	Write 20:12 in 12 hour clock format	
10	9:37 pm is how many minutes after 9:08 pm?	
	Total out of 10	

TIMESTABLES – do these in your head

Q	Question	Answer
1	2 × 9 = □	
2	24 ÷ 3 = □	
3	10 × □ = 80	
4	6 ÷ □ = 3	
5	1 × 2 = □	
6	28 ÷ 7 = □	
7	□ × 6 = 54	
8	□ ÷ 2 = 5	
9	3 × 9 = □	
10	4 ÷ 4 = □	
	Total out of 10	

KEY SKILLS – you may use written calculations for these questions

Q	Question	Answer
1	61 × 31	
2	657 – 382	
3	7.2 × 94.2	
4	0.7 as a fraction	
5	46.15 + 5.08	
6	(-40) ÷ (-4)	
7	If a = 4 b = 3 and c = 1, what is the value of $3a - b^2$?	
8	3 – (-5)	
9	What is the highest common factor of 12 and 4?	
10	What is the value of 13 squared?	
	Total out of 10	



MENTAL STRATEGIES: ☐

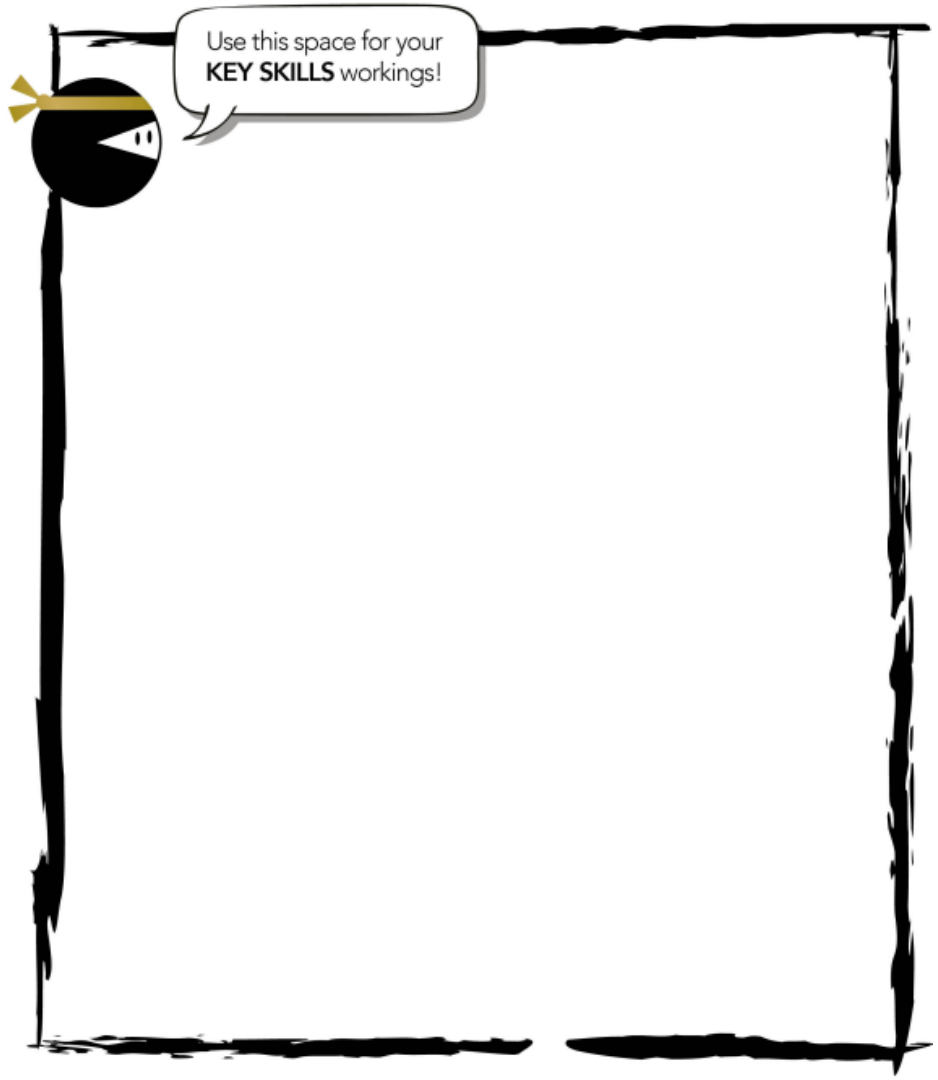
TIMESTABLES: ☐

KEY SKILLS: ☐ +

MY NINJA BELT: ☐

NINJA SCORE: ☐

NUMERACY NINJAS 5 MINUTE SKILL CHECK



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NUMERACYNINJAS.ORG

View slideshow then click the session you wish to run

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

Week 21	Session 1	Session 2	Session 3	Session 4	Session 5
Week 22	Session 1	Session 2	Session 3	Session 4	Session 5
Week 23	Session 1	Session 2	Session 3	Session 4	Session 5
Week 24	Session 1	Session 2	Session 3	Session 4	Session 5
Week 25	Session 1	Session 2	Session 3	Session 4	Session 5
Week 26	Session 1	Session 2	Session 3	Session 4	Session 5
Week 27	Session 1	Session 2	Session 3	Session 4	Session 5
Week 28	Session 1	Session 2	Session 3	Session 4	Session 5
Week 29	Session 1	Session 2	Session 3	Session 4	Session 5
Week 30	Session 1	Session 2	Session 3	Session 4	Session 5
Week 31	Session 1	Session 2	Session 3	Session 4	Session 5
Week 32	Session 1	Session 2	Session 3	Session 4	Session 5
Week 33	Session 1	Session 2	Session 3	Session 4	Session 5
Week 34	Session 1	Session 2	Session 3	Session 4	Session 5
Week 35	Session 1	Session 2	Session 3	Session 4	Session 5
Week 36	Session 1	Session 2	Session 3	Session 4	Session 5
Week 37	Session 1	Session 2	Session 3	Session 4	Session 5
Week 38	Session 1	Session 2	Session 3	Session 4	Session 5
Week 39	Session 1	Session 2	Session 3	Session 4	Session 5
Week 40	Session 1	Session 2	Session 3	Session 4	Session 5

Week 1 Session 1

Get your Skill Books ready…

Your time is up!

Get ready to mark your answers

Click the logo to begin

Week 1 Session 1

Mental Strategies Answers

Q	Question	Answer
1	2 + 3	**5**
2	89 + 11	**100**
3	What is half of 6?	**3**
4	125 − 10	**115**
5	177 + □ = 270	**93**
6	53 = 23 + □	**30**
7	805 − 804	**1**
8	4 × 1 = 4, so 4 ÷ 4 = □	**1**
9	Write 20:12 in 12 hour clock format	**8:12 pm**
10	9:37 pm is how many minutes after 9:08 pm?	**29**

Week 1 Session 1

Timestables Answers

Q	Question	Answer
1	2 × 9 = □	**18**
2	24 ÷ 3 = □	**8**
3	10 × □ = 80	**8**
4	6 ÷ □ = 3	**2**
5	1 × 2 = □	**2**
6	28 ÷ 7 = □	**4**
7	□ × 6 = 54	**9**
8	□ ÷ 2 = 5	**10**
9	3 × 9 = □	**27**
10	4 ÷ 4 = □	**1**

Week 1 Session 1

Key Skills Answers

Q	Question	Answer
1	61 × 31	**1891**
2	657 − 382	**275**
3	7.2 × 94.2	**678.24**
4	0.7 as a fraction	**7/10**
5	46.15 + 5.08	**51.23**
6	(−40) ÷ (−4)	**10**
7	If a = 4 b = 3 and c = 1, what is the value of $3a - b^2$?	**3**
8	3 − (−5)	**8**
9	What is the highest common factor of 12 and 4?	**4**
10	What is the value of 13 squared?	**169**

Week 1
Session 1

Calculate your Ninja Score to see which Ninja Belt you've earned today!

Content Domains

KS2 Maths SATs papers analysis Percentage of questions by content domain					
Content domain	**2016**	**2017**	**2018**	**2019**	**2022**
Number & PV	17	9	10	9	9
Calculations	17	22	29	30	38
FDP	15	14	14	24	25
Ratio & prop.	4	9	6	8	6
Algebra	8	9	9	6	3
Measurement	15	14	13	9	7
Shapes	12	9	10	7	6
Pos. & direction	4	3	4	3	2
Statistics	8	11	6	4	3

What was missing in 2022?

- Estimation
- Time
- Drawing and/or measuring angles using a protractor

Summary of the missing content in SATs 2022

The content domains for each question are detailed on page 4 of the mark scheme.

According to the listed domains, the following areas were missing from this year's papers.

- **Number and place value**: counting in multiples (N1) and number problems (N6)
- **Calculations** (four operations): estimate, use inverses and check (C3)
- **Fractions, decimals and percentages:** comparing and ordering fractions (F3); fractions/decimal/percentage equivalence (F11); and solve problems with percentages (F12) *(don't be misled by Paper 3 Q18 – this is actually a ratio question: using percentages for comparison (R2))*
- **Ratio and proportion:** scale factors (R3) and unequal sharing and grouping (R4)
- **Algebra:** generate and describe linear number sequences (A3) and enumerate all possibilities of combinations of two variables (A5)
- **Measurement:** estimate, measure and read scales (M2); telling time, ordering time, duration and units of time (M4 – Third Space Learning thought this may appear as it was missing from the 2019 paper); convert metric/imperial (M6); perimeter, area (M7); and volume (M8 – Third Space Learning predicted this would be omitted this year!)
- **Geometry – properties of shapes:** describe properties and classify shapes (G2)

Third Space Predicts

	Addition and Subtraction		Improper Fractions and Mixed Numbers		Transformations (reflection and translation)
	Multiplication and Division		Fractions Decimals and Percentages		Time
	Money		Finding Fractions and Percentages of Amounts		Ratio and Scale
	Solving Multiplication and Division Problems		Place Value		3D shapes and Nets
	Solving Problems using Mixed Operations		Rounding		Perimeter and Area
	Algebra		Ordering Whole Numbers and Decimals		Order of Operations
	Representations of Data		Measures		2D Shapes
	Decimal Calculations		Negative Numbers and Coordinates		Volume
	Comparing and Ordering Fractions		Angles		
	Calculating with Fractions		Multiples Factors and Prime Numbers		
			Number Sequences		

THIRD SPACE LEARNING

Crafty Reasoning

17 6 divides into 40 with a remainder of 4

Write **one** other number that divides into 40 with a remainder of 4

11 Ally chooses a whole number.

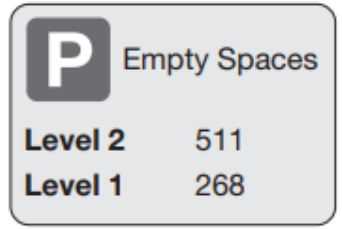
When she multiplies her number by **4**, the answer is **less than 100**

When she multiplies her number by **5**, the answer is **greater than 100**

Write a number that Ally could have started with.

1 mark

18 This sign shows the number of **empty spaces** on each level of a car park at 10 am.



In this car park, **each** level has 800 spaces.

What is the total number of cars **parked** in the car park at 10 am?

Show your method

Crafty Reasoning

20 There are 432 places at a dance school.

There are two age groups.

This table shows the number of classes and the number of pupils in each class for each age group at the moment.

Age in years	Number of classes	Number of pupils in each class
7–12	15	16
13–18	10	18

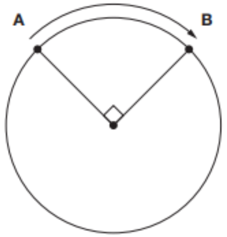
How many **more** pupils can join the dance school?

Show your method

2 marks

Daily Puzzles

19 The **circumference** of this circle is 60 centimetres.



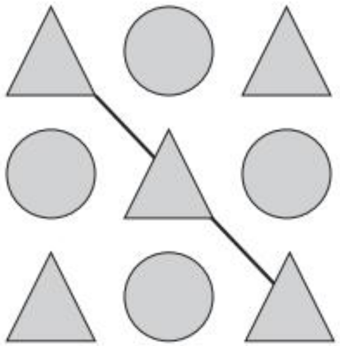
Not actual size

What is the distance around the edge of the circle from **A** to **B**?

[ ] cm

1 mark

21



Each shape stands for a number.

The total of the shapes on the diagonal line is 48

The total of all the shapes is 200

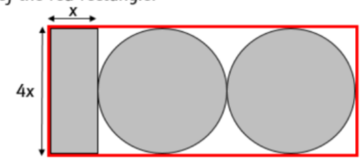
Calculate the value of each shape.

 = [ ]

 = [ ]

Daily Maths Puzzle 100

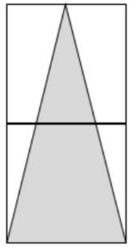
The radius of each of the identical circles is 4 cm. Find the area of the red rectangle.



#dailymathspuzzle @SarahFarrellKS2

Daily Maths Puzzle 104

The perimeter of one of these squares is 28 cm. What is the area of the triangle?



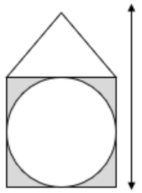
#dailymathspuzzle @SarahFarrellKS2

Sarah Farrell @SarahFarrellKS2 · Sep 7, 2022
#dailymathspuzzle #edutwitter

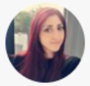
Daily Maths Puzzle 227

This shape is made up of a square, a circle and a triangle.

The radius of the circle is 3 cm.
What is the area of the triangle?



#dailymathspuzzle @SarahFarrellKS2



Sarah Farrell
@SarahFarrellKS2
Follow
Maths Lead | Author of #TimesTablesNinja | UKS2 Teacher | #DailyMathsPuzzle Creator | National Curriculum Lead |

GDS kids can easily slip up on these questions...

14 Jack hires a hall for a party.

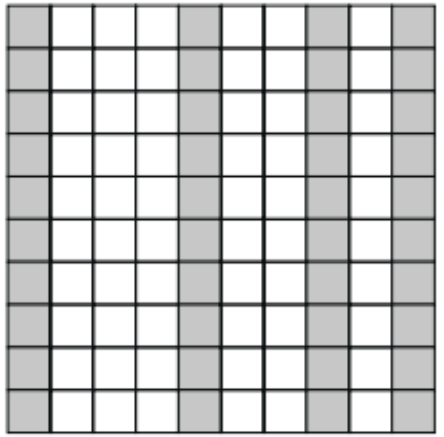
This formula is used to work out the total cost.

Total cost = £15 booking fee + £12.50 per hour

What is the total cost of hiring the hall from 6 pm until 11 pm?

£

16 Part of this 10 × 10 grid is shaded.



Tick the fractions that represent the shaded part of the grid.

- $\frac{1}{4}$ ☐
- $\frac{2}{5}$ ☐
- $\frac{4}{10}$ ☐
- $\frac{6}{10}$ ☐
- $\frac{40}{100}$ ☐

2 marks

So many careless!

18

The **full price** of a T-shirt is £15

The price is reduced by 30%.

What is the **reduced price**?

Show your method

£

2 marks

Questions with more than one demain

23 Adam has a bag of fruit that weighs **1.25 kilograms**.

He takes out a banana. Now the bag of fruit weighs **1.1 kg**.

Next, he takes out an orange. Now the bag weighs **920 g**.

How much **more** does the orange weigh than the banana?

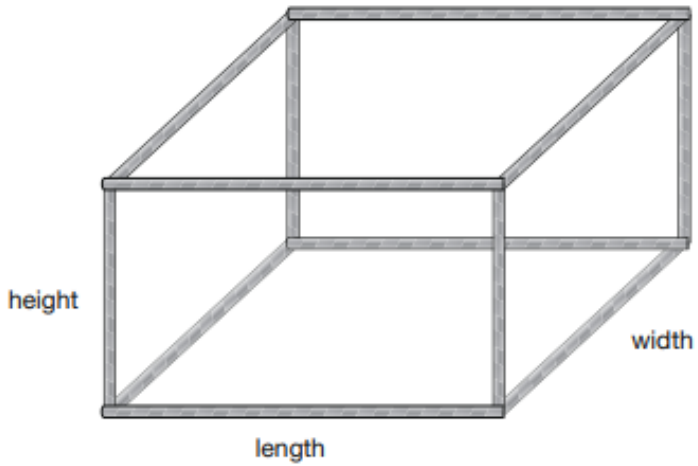
Show your method

g

2 marks

Questions with more than one demain

17 Kim makes a cuboid model using straws.



She uses straws that are 7.5 cm long for the height.

She uses straws that are 11 cm long for the length.

She uses straws that are 8.5 cm long for the width.

What is the **total** length of all the straws in her model?

Show your method

cm

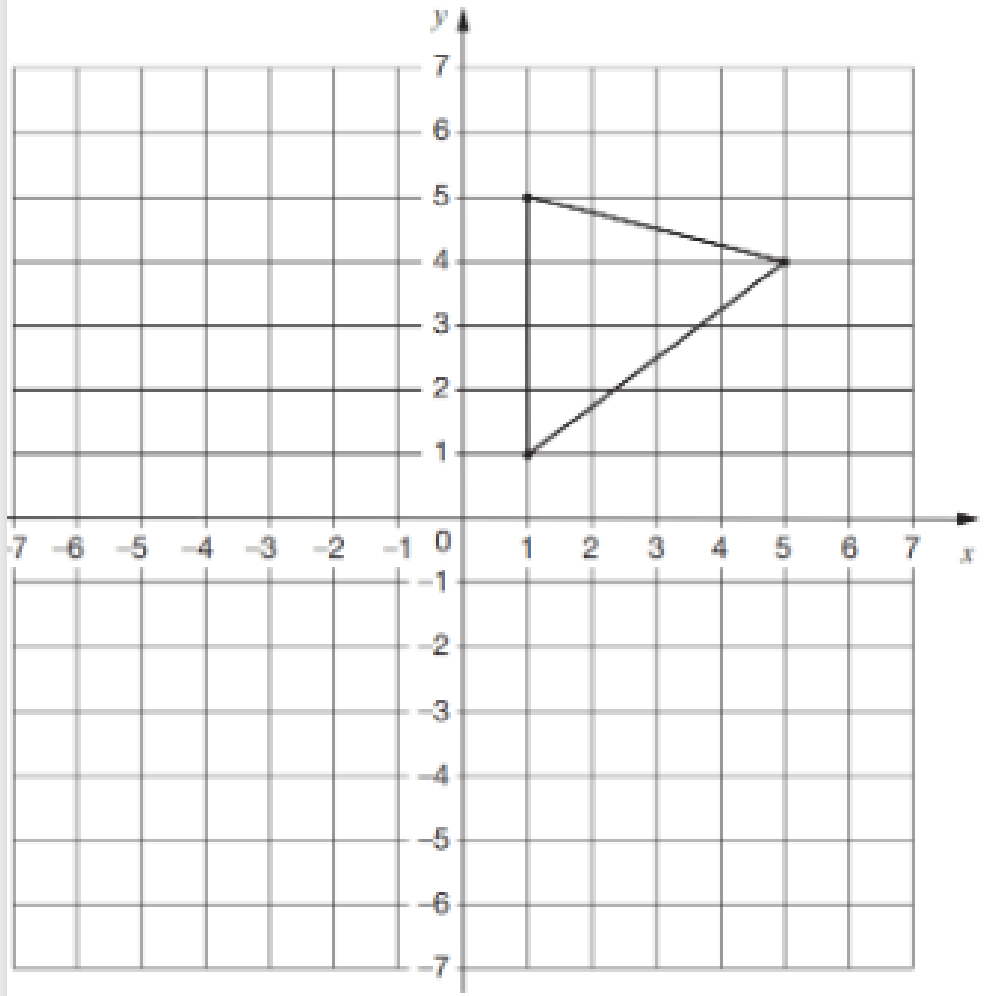
2 marks

CRUEL LAYOUT

The triangle is to be transformed on the grid as follows:

- First translate the shape 7 units down.
- Then reflect the **resulting** triangle in the y-axis.

Draw the new triangle on the grid after **each** transformation.



Use a ruler.

Twitter did not like this beast!

20 This table shows how many people finished the New York Marathon in each of the first four decades it was held.

New York Marathon	
Decade	**Total number of people who finished**
1st decade	24,863
2nd decade	170,932
3rd decade	282,420
4th decade	350,824

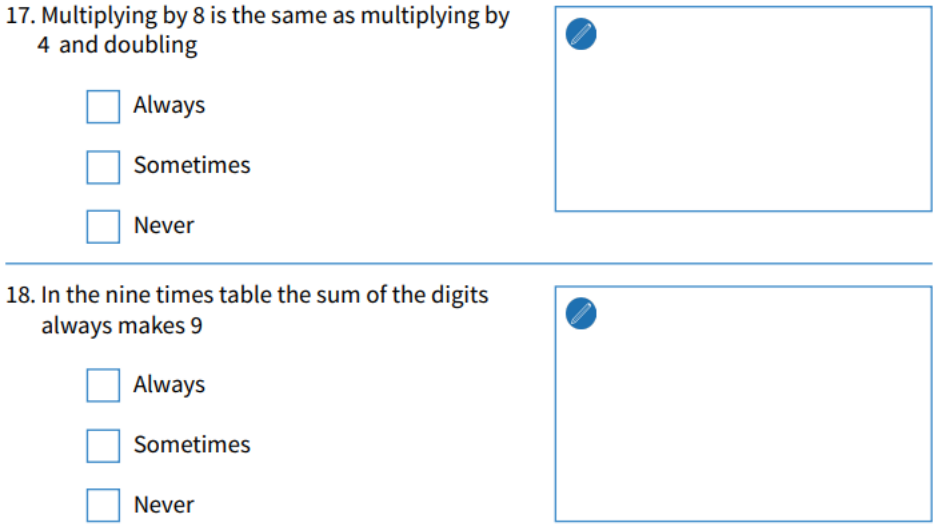
What is the mean number of people who finished the marathon per decade? Round your answer to the **nearest hundred**.

1. Add the four 5/6 digit numbers
2. Mean - Divide by 4
3. Answer has remainder/decimal
4. Round to the nearest hundred

Resources

Getting to Greater Depth in KS2 Maths

108 Greater Depth Questions for KS2 Maths Mastery


17. Multiplying by 8 is the same as multiplying by 4 and doubling

- [ ] Always
- [ ] Sometimes
- [ ] Never

18. In the nine times table the sum of the digits always makes 9

- [ ] Always
- [ ] Sometimes
- [ ] Never

Free on TES

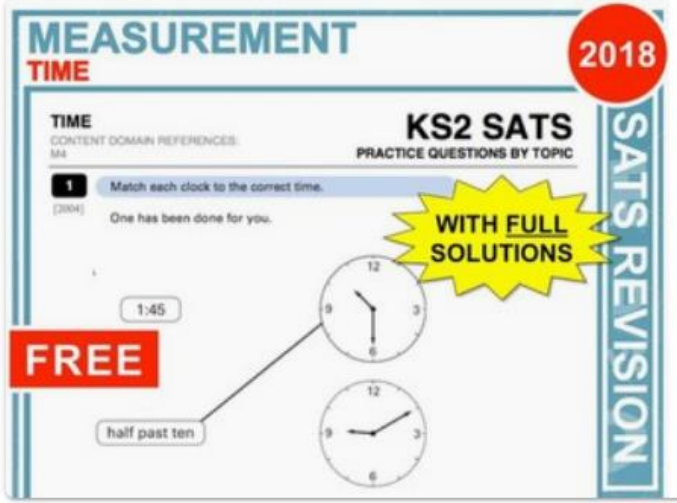
KS2 Maths (Worded Questions)

★★★★½ (27)

FREE

by Maths4Everyone

These topic-focused SATs questions at the end of a unit will help to test and extend students' understanding as well as helping them to prepare for SATs next year. These questions have fully-



KS2 Maths (Time)

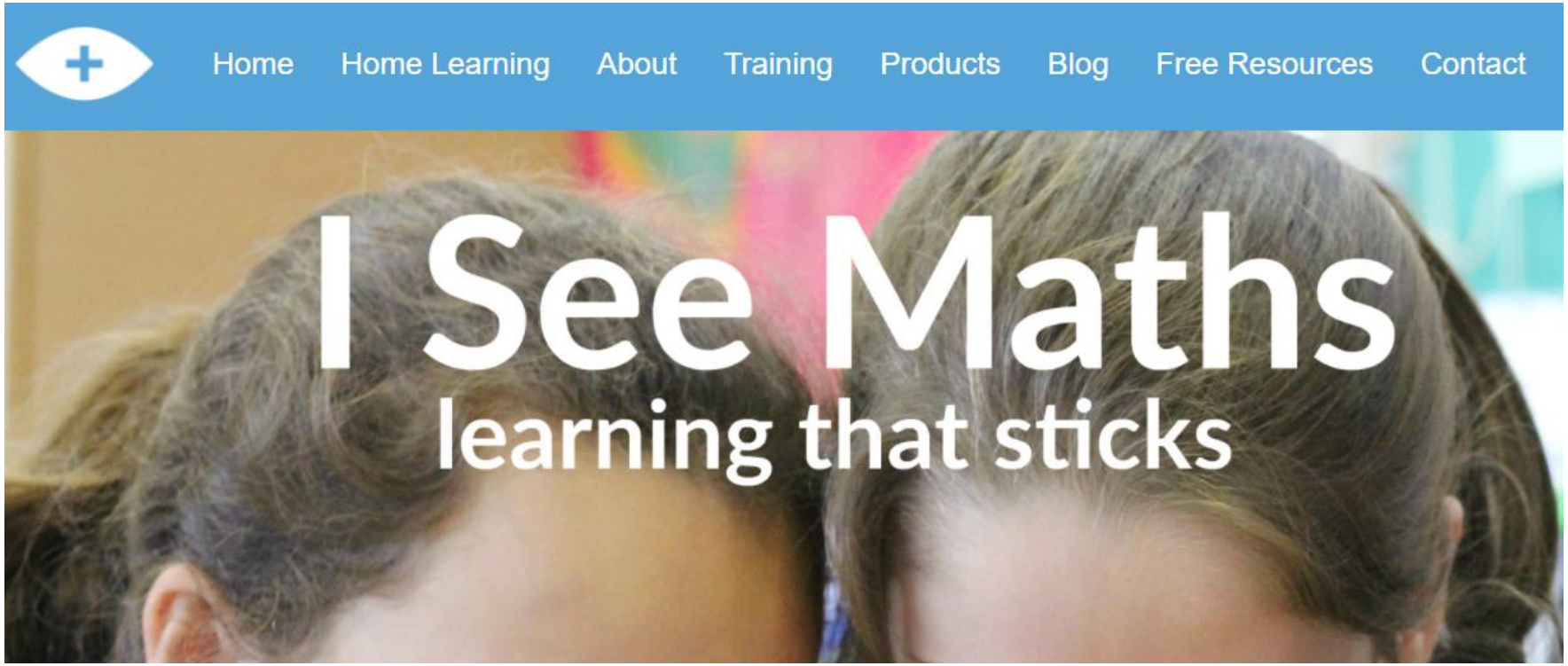
★★★★★ (40)

FREE

by Maths4Everyone

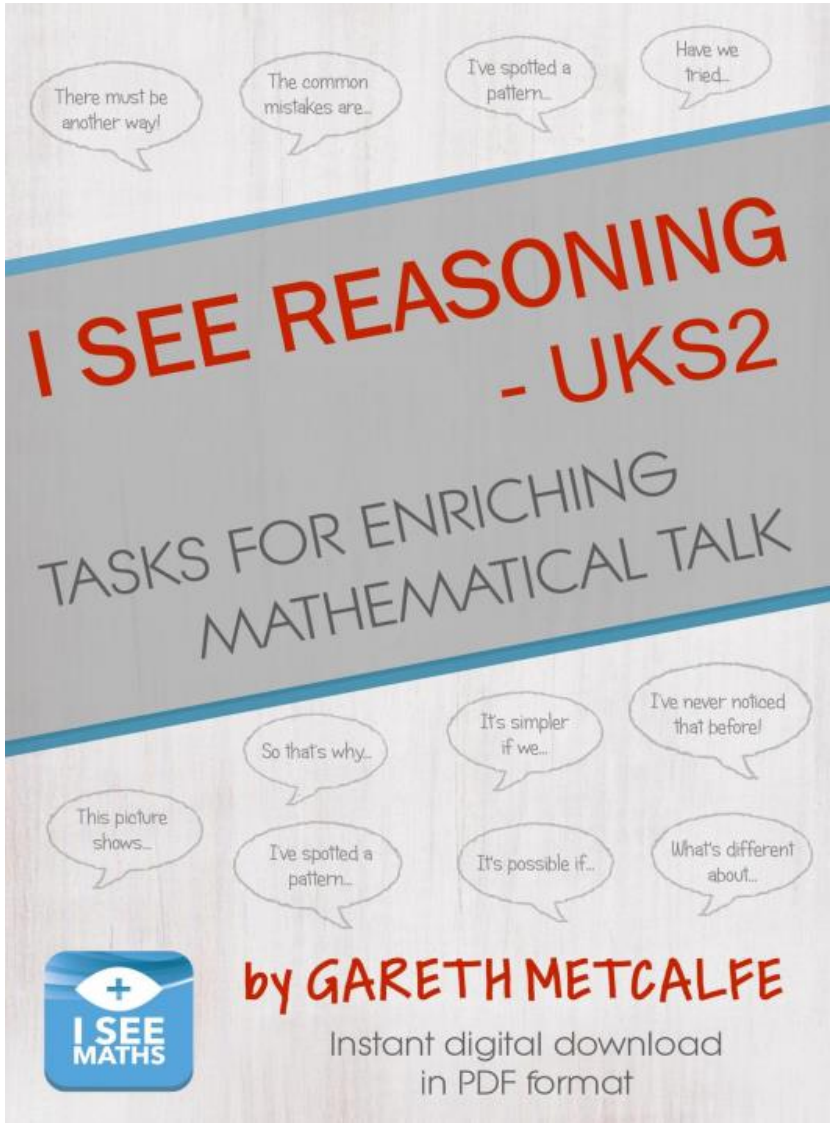
These topic-focused SATs questions at the end of a unit will help to test and extend students' understanding as well as helping them to prepare for SATs next year. These questions have fully-

Gareth Metcalfe Maths



Gareth Metcalfe Maths

I See Reasoning



I SEE REASONING – UKS2

Contents

Gareth Metcalfe Maths

I See Reasoning

Explain the mistakes

163 × 27

Mistake 1

$$\begin{array}{r} 163 \\ \times\ 27 \\ \hline 1141 \\ 326 \\ \hline 1467 \end{array}$$

Mistake 2

$$\begin{array}{r} 163 \\ \times\ 27 \\ \hline 721 \\ 2260 \\ \hline 2981 \end{array}$$

I know… so…

$24 \times 18 = 432$

$25 \times 18 =$ _____

$25 \times 17 =$ _____

Missing digits

$$\begin{array}{r} \square 8 \square \\ \times\ 9 \\ \hline 7047 \end{array}$$

Missing digits

$$\begin{array}{r} \square 15 \\ \times\ 6 \square \\ \hline 3260 \\ 48900 \\ \hline 52160 \end{array}$$

Investigate

The sum of the digits for a 4-digit number is larger than the sum of the digits for a 3-digit number.

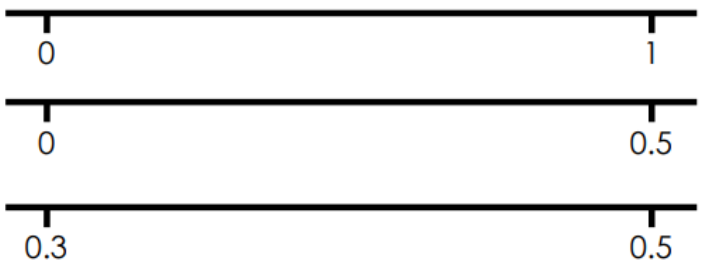
Make the two numbers using digits 0-9 (no repeats). Minimise the difference between the numbers.

Gareth Metcalfe Maths

I See Reasoning

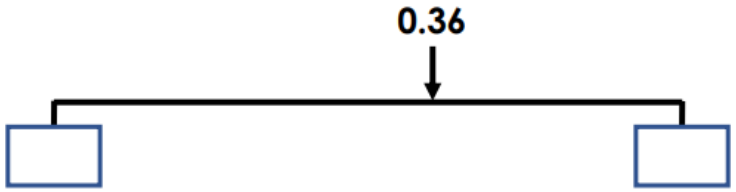
Number lines

Show the position of **0.43** on each number line.



Different ways

What could the start and end numbers be?



Broken calculator

'The 8 and 2 keys on my calculator are broken!'

How can I use it to work out:

50×28

25×18

Rank by difficulty

What is the difference between:

-70 and 120

-70 and -20

-70 and 160

How many ways?

Complete using digits 0-9. The digit in the box with a border must be odd.

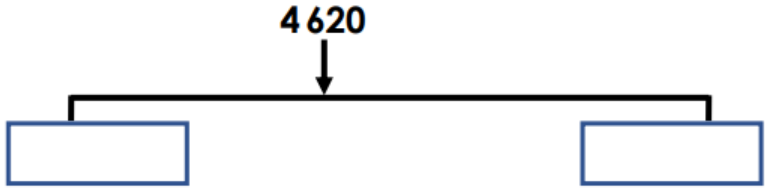
Level 1: I can find a way

Level 2: I can find different ways

Level 3: I know how many ways there are

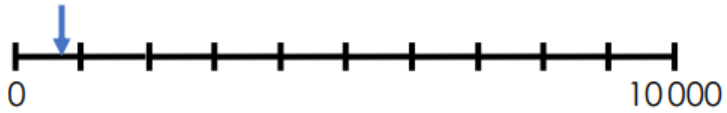
Different ways

What could the start and end numbers be?



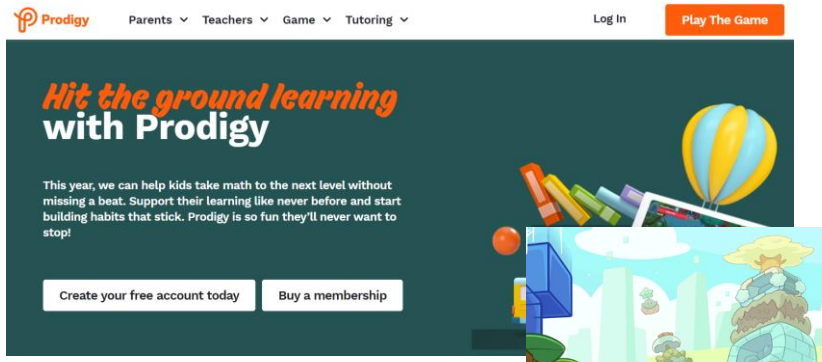
Estimate

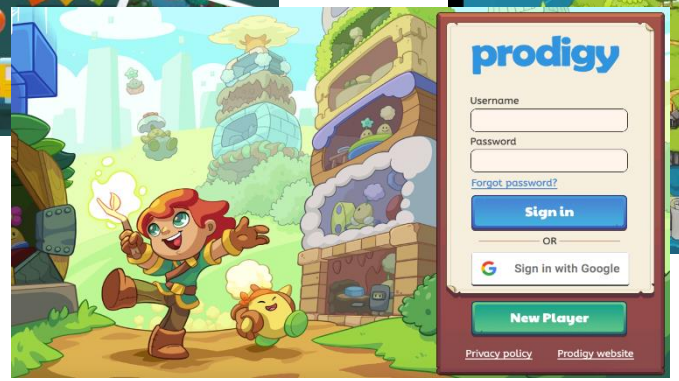
Estimate the position of the arrow.

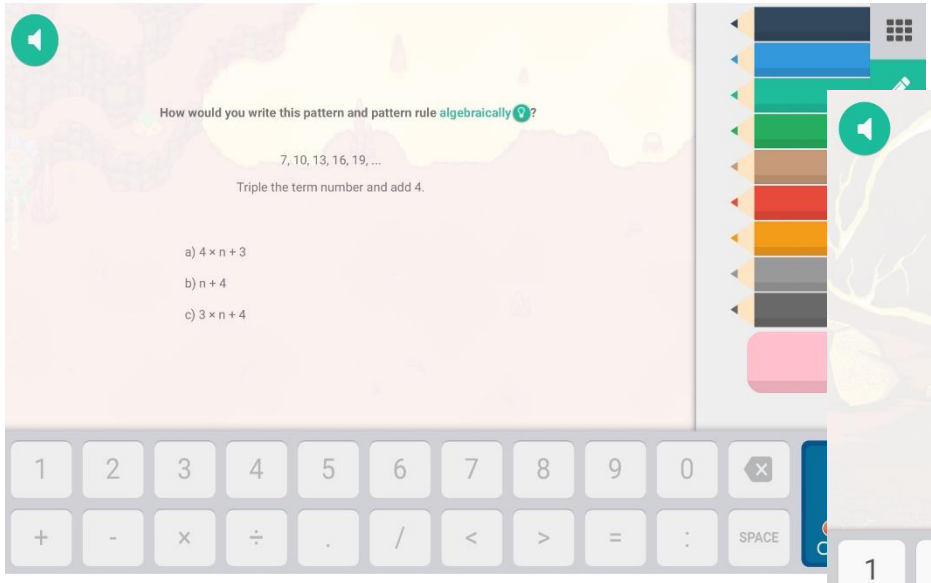


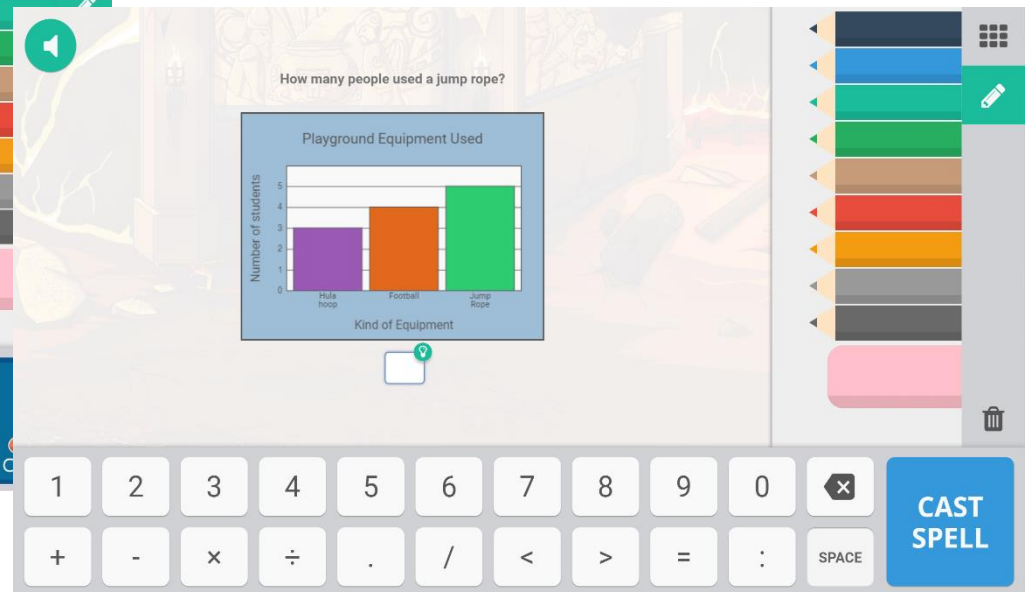
Prodigy

Maths Game









Maths Websites

Maths.co.uk

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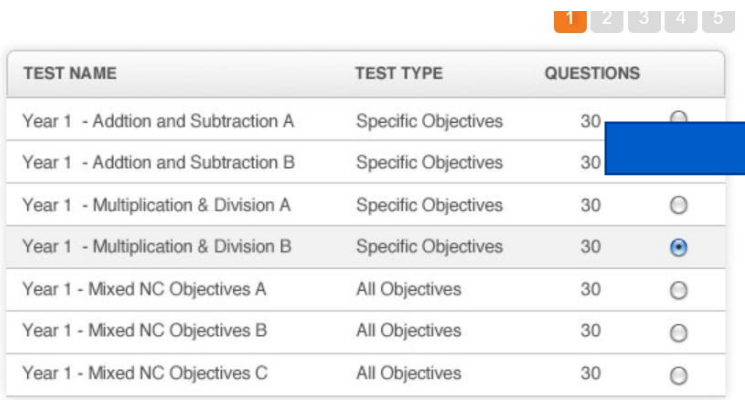
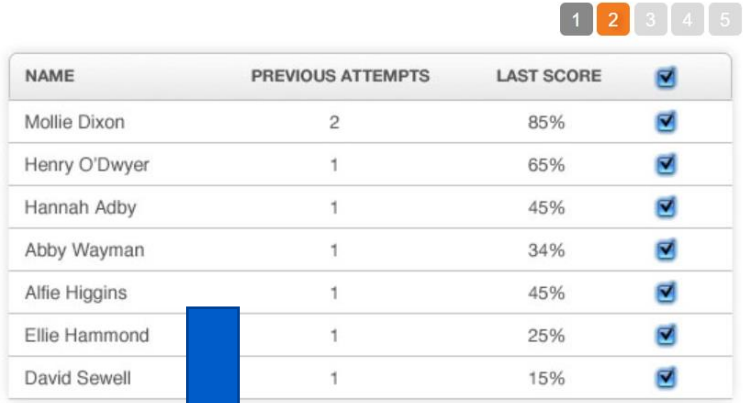
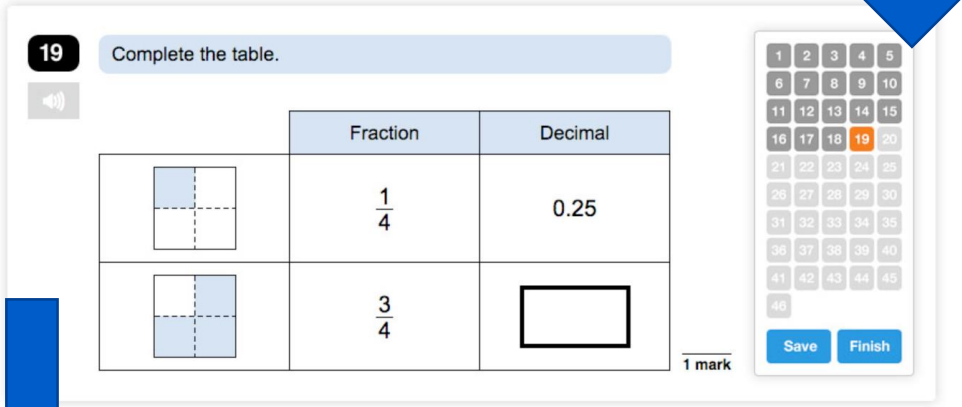
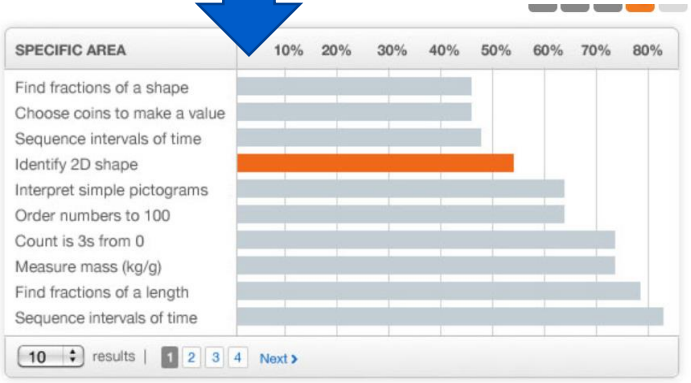


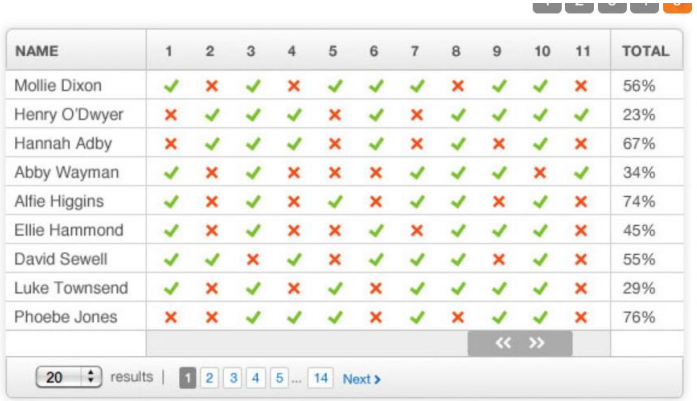
TEST NAME	TEST TYPE	QUESTIONS	
Year 1 - Addtion and Subtraction A	Specific Objectives	30	○
Year 1 - Addtion and Subtraction B	Specific Objectives	30	○
Year 1 - Multiplication & Division A	Specific Objectives	30	○
Year 1 - Multiplication & Division B	Specific Objectives	30	◉
Year 1 - Mixed NC Objectives A	All Objectives	30	○
Year 1 - Mixed NC Objectives B	All Objectives	30	○
Year 1 - Mixed NC Objectives C	All Objectives	30	○



NAME	PREVIOUS ATTEMPTS	LAST SCORE	☑
Mollie Dixon	2	85%	☑
Henry O'Dwyer	1	65%	☑
Hannah Adby	1	45%	☑
Abby Wayman	1	34%	☑
Alfie Higgins	1	45%	☑
Ellie Hammond	1	25%	☑
David Sewell	1	15%	☑







NAME	1	2	3	4	5	6	7	8	9	10	11	TOTAL
Mollie Dixon	✓	✗	✓	✗	✓	✓	✓	✗	✓	✓	✗	56%
Henry O'Dwyer	✗	✓	✓	✓	✗	✓	✗	✓	✓	✓	✓	23%
Hannah Adby	✗	✓	✓	✓	✗	✓	✗	✓	✗	✓	✗	67%
Abby Wayman	✓	✗	✓	✗	✗	✗	✓	✓	✓	✗	✓	34%
Alfie Higgins	✓	✗	✓	✗	✓	✗	✓	✓	✗	✓	✗	74%
Ellie Hammond	✓	✗	✓	✗	✗	✓	✗	✓	✓	✓	✗	45%
David Sewell	✓	✓	✗	✓	✗	✓	✓	✓	✗	✓	✗	55%
Luke Townsend	✓	✗	✓	✗	✓	✗	✓	✓	✓	✓	✗	29%
Phoebe Jones	✗	✗	✓	✓	✓	✗	✓	✗	✓	✓	✗	76%

20 results | 1 2 3 4 5 ... 14 Next