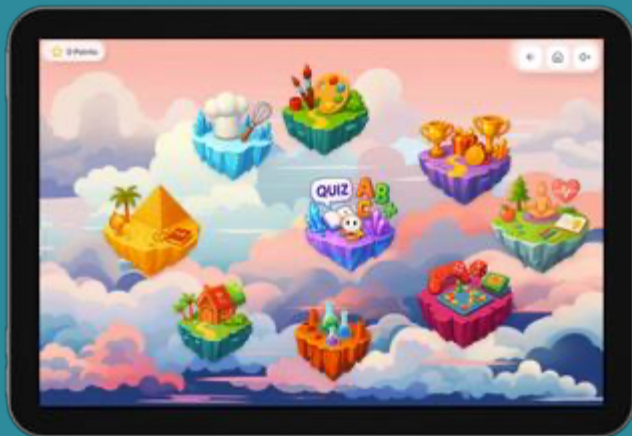




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Odd and Even Numbers Year 3

Table of Contents	
Presentation: Odd and Even Numbers	
Display: Odd and Even Number Detectives	
Activities: Pair It Up & Odd or Even Sort	
Game: Odd-Even Space Race	
Worksheet: Pairing and Last-Digit Clues	
Worksheet: Hundreds Chart Patterns	
Worksheet: Classifying Large Numbers	
Worksheet: Odd and Even Operations	
Worksheet: Temple Trails	
Worksheet: Odd and Even Review	
Quiz: Odd and Even Numbers	
Assessment: Odd and Even Number Investigation	
Rubric: Odd and Even Numbers Rubric	





ODD AND EVEN



NUMBER DETECTIVES

EVEN

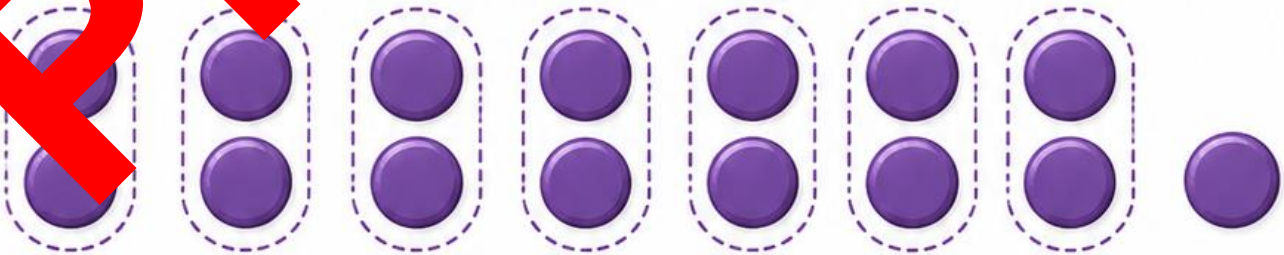
Makes equal pairs



Ends in 0, 2, 4, 6 or 8

ODD

Leaves one unpaired



Ends in 1, 3, 5, 7 or 9

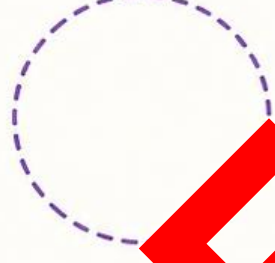
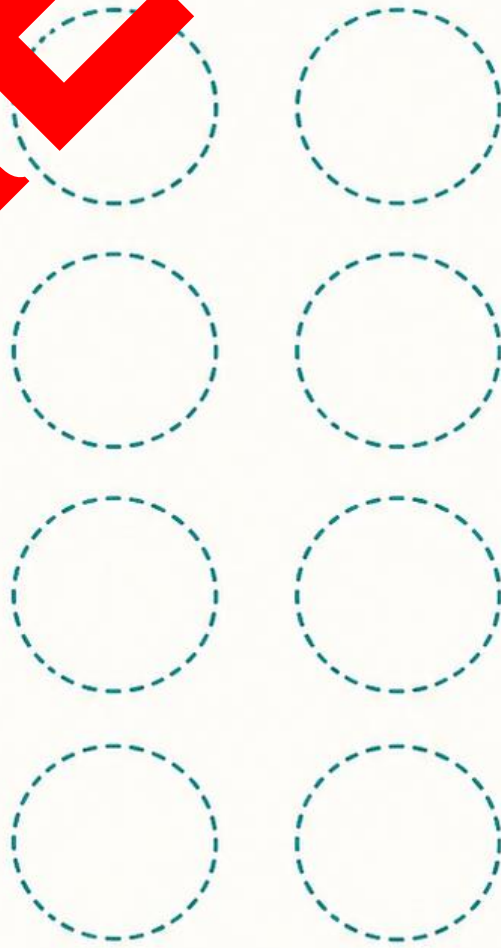


Check the final digit!

PAIR IT UP!

COMPLETE PAIRS

ONE LEFT OVER



1. Choose a number card.

7

2. Build the number with counters.



3. Decide: odd or even?

EVEN

ODD

ODD OR EVEN NUMBER SORT

Draw a card. Check the final digit. Place it in the correct zone.

EVEN

0, 2, 4, 6, 8

ODD

1, 3, 5, 7, 9

.....

✓ Explain your clue to a partner.

.....

19

53

69

12

49

82

17

31

75

0

24

68

PREVIEW

105

218

307

442

569

680

791

854

909

1026

2345

4008

PREVIEW

ODD-EVEN SPACE RACE

Draw a number card.
Move on the space when it
matches your team.

START

1

2

3

4

5

6

7

8

15

14

13

12

11

10

9

16

17

18

19

20

21

22

23

24

FINISH

EVEN TEAM



ODD TEAM





HOW TO PLAY

1. One player is EVEN TEAM. One player is ODD TEAM.
2. Take turns drawing a card.
3. Move one space if the number matches your team.
4. First to FINISH wins.



PAIRING AND LAST-DIGIT CLUES

Name: _____

A. Write O for odd or E for even.

1. 6 _____

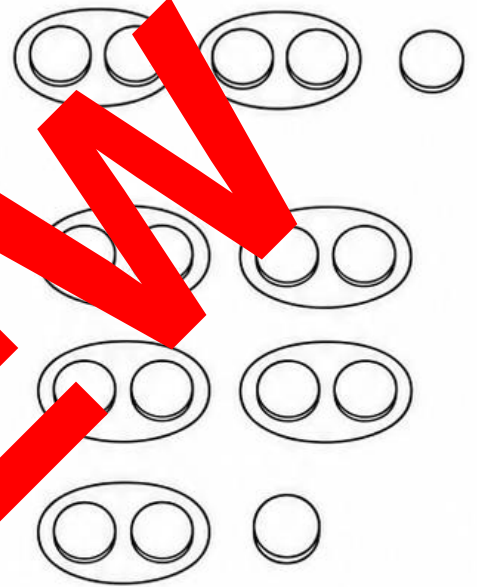
2. 9 _____

3. 12 _____

4. 15 _____

5. 18 _____

6. 21 _____



B. Complete the table.

NUMBER	FINAL DIGIT	ODD OR EVEN?
2		
7		
120		
803		
1246		
3971		

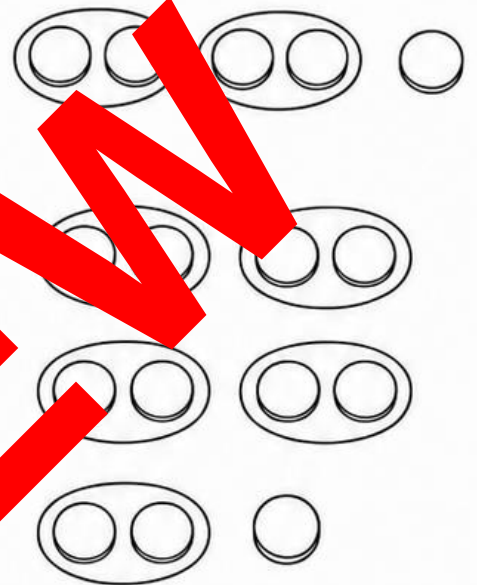
C. How does the final digit help you decide?

PAIRING AND LAST-DIGIT CLUES

ANSWERS

A. Write O for odd or E for even.

1. 6 E
2. 9 O
3. 12 E
4. 15 O
5. 18 E
6. 21 O



B. Complete the table.

NUMBER	FINAL DIGIT	ODD OR EVEN?
2	4	EVEN
7	7	ODD
120	0	EVEN
803	3	ODD
1246	6	EVEN
3971	1	ODD

C. How does the final digit help you decide?

Even numbers end in 0, 2, 4, 6 or 8. Odd numbers end in 1, 3, 5, 7 or 9.

Name: _____



HUNDREDS CHART PATTERNS

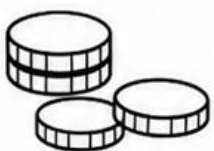
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

1. Color every even number.

2. Underline every odd number.

3. What pattern do you notice across each row?

4. Continue the even-number pattern: 42, 44, 46, __, __, __



ANSWERS _____



HUNDREDS CHART PATTERNS

<u>1</u>	(2)	<u>3</u>	(4)	<u>5</u>	(6)	<u>7</u>	(8)	<u>9</u>	(10)
<u>11</u>	(12)	<u>13</u>	(14)	<u>15</u>	(16)	<u>17</u>	(18)	<u>19</u>	(20)
<u>21</u>	(22)	<u>23</u>	(24)	<u>25</u>	(26)	<u>27</u>	(28)	<u>29</u>	(30)
<u>31</u>	(32)	<u>33</u>	(34)	<u>35</u>	(36)	<u>37</u>	(38)	<u>39</u>	(40)
<u>41</u>	(42)	<u>43</u>	(44)	<u>45</u>	(46)	<u>47</u>	(48)	<u>49</u>	(50)

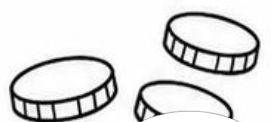
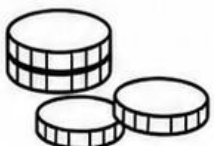
1. Color every even number.

2. Underline every odd number.

3. What pattern do you notice across each row?

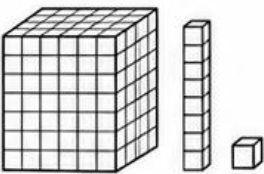
Odd and even numbers alternate across each row.

4. Continue the even-number pattern: 42, 44, 46, 48, 50, 52



Name: _____

CLASSIFYING LARGE NUMBERS



Complete the table. Use only the final digit as your clue.

NUMBER	FINAL DIGIT	ODD OR EVEN?
147		
238		
405		
690		
1312		
2457		
3080		
4999		
5624		
7731		
8906		
91		

Write T for true or F for false.

1. A number ending in 0 is even.

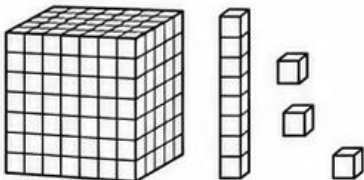
☐

2. A number ending in 5 is even.

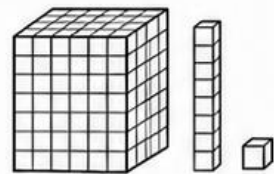
☐

3. Create a four-digit even number:

4. Create a four-digit odd number:



CLASSIFYING LARGE NUMBERS



Complete the table. Use only the final digit as your clue.

NUMBER	FINAL DIGIT	ODD OR EVEN?
147	7	ODD
238	8	EVEN
405	5	ODD
690	0	EVEN
1312	2	EVEN
2457	7	ODD
3080	0	EVEN
4999	9	ODD
5624	4	EVEN
7731	1	ODD
8006	6	EVEN
91	1	ODD

Write T for true or F for false.

1. A number ending in 0 is even.

T

2. A number ending in 5 is even.

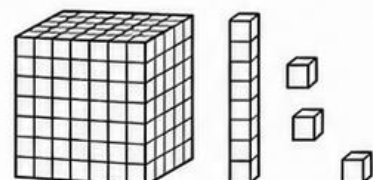
F

3. Create a four-digit even number:

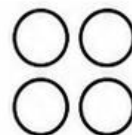
2468

4. Create a four-digit odd number:

1357



Name: _____



ODD AND EVEN OPERATIONS

Predict first. Then calculate to check.

EXPRESSION	PREDICT ODD OR EVEN	CALCULATE	CHECK
$23 + 15$			
$44 + 18$			
$27 + 32$			
$91 - 35$			
$76 - 21$			
$58 - 26$			

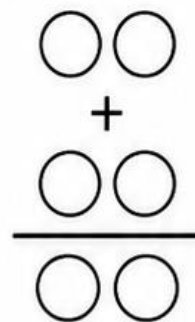
Complete the rules.

Odd + odd = _____

Even + even = _____

Odd + even = _____

Odd - even = _____



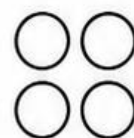
Which expression has an odd result?

A. $12 + 24$

B. $35 + 18$

C. $47 + 21$

D. $66 - 20$



ODD AND EVEN OPERATIONS

Predict first. Then calculate to check.

EXPRESSION	PREDICT ODD OR EVEN	CALCULATE	CHECK
$23 + 15$	EVEN	38	EVEN
$44 + 18$	EVEN	62	EVEN
$27 + 32$	ODD	59	ODD
$91 - 35$	EVEN	56	EVEN
$76 - 21$	ODD	55	ODD
$58 - 26$	EVEN	32	EVEN

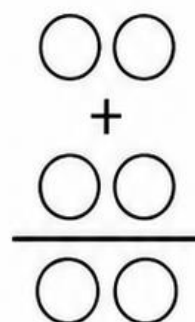
Complete the rules.

Odd + odd = **EVEN**

Even + even = **EVEN**

Odd + even = **ODD**

Odd - even = **ODD**



Which expression has an odd result?

A. $12 + 24$

B. $35 + 18$

C. $47 + 21$

D. $66 - 20$



TEMPLE TRAILS



Name: _____

Start at $18 + 6$. Move up, down, left or right only through equations with even answers. Reach the treasure.

START



$18 + 6$	$13 + 7$	$9 + 8$	$24 + 5$	$16 + 5$	$30 - 9$
$11 + 6$	$24 - 8$	$15 + 5$	$31 - 7$	$18 + 9$	$42 - 15$
$14 + 5$	$27 - 8$	$33 + 6$	$26 + 12$	$45 - 19$	$52 - 15$
$17 + 4$	$35 - 9$	$40 - 17$	$19 + 8$	$34 - 12$	$27 + 15$
$5 + 8$	$36 - 11$	$22 + 13$	$48 - 17$	$51 - 22$	$64 - 20$



TREASURE

Choose one equation with an odd answer.
Explain how you know.





TEMPLE TRAILS



ANSWERS

Start at $18 + 6$. Move up, down, left or right only through equations with even answers. Reach the treasure.

START



$18 + 6$	$13 + 7$	$9 + 8$	$25 + 4$	$16 + 5$	$30 - 9$
$11 + 6$	$24 - 8$	$15 + 5$	$31 - 7$	$18 + 9$	$42 - 15$
$14 + 5$	$27 - 3$	$33 + 6$	$26 + 12$	$45 - 19$	$52 - 15$
$17 + 4$	$35 - 2$	$40 - 17$	$19 + 8$	$34 - 12$	$27 + 15$
$5 + 8$	$36 - 11$	$22 + 13$	$48 - 17$	$51 - 22$	$64 - 20$



TREASURE

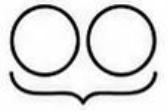
Choose one equation with an odd answer.
Explain how you know.

$9 + 8 = 17$. The final digit is 7, so the answer is odd.





ODD AND EVEN REVIEW



Name: _____

1. Write O for odd or E for even.

76 _____	103 _____	248 _____	575 _____	120 _____	3487 _____
-------------	--------------	--------------	--------------	--------------	---------------

2. Continue each pattern.

32, 34, 36, _____, _____

71, 73, 75, _____, _____

3. Mia says 4507 is even because it has a 0 in it. Is Mia correct? Explain.

4. Solve.

	A jar packs 37 counters into pairs. How many complete pairs are made? How many counters are left over? Complete pairs: _____ Left over: _____
--	---

	A jar holds 48 counters. Can they be shared equally between two groups? How many in each group? Yes / No Number in each group: _____
--	---

5. Create a four-digit even number and a four-digit odd number.
Circle each final digit.

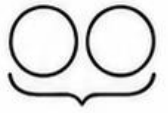
Even number: _____ _____	
--------------------------------	--

Odd number: _____ _____	
-------------------------------	--



ODD AND EVEN REVIEW

ANSWERS



1. Write O for odd or E for even.

76 E	103 O	248 E	575 O	120 E	3487 O
----------------	-----------------	-----------------	-----------------	-----------------	------------------

2. Continue each pattern.

32, 34, 36, **38**, **40**, **42**

71, 73, 75, **77**, **79**, **81**

3. Mia says 4507 is even because it has a 0 in it. Is Mia correct? Explain.

No. The final digit is 7 so 4507 is odd.

4. Solve.

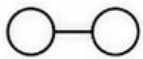
	A jar packs 37 counters into pairs. How many complete pairs are made? How many counters are left over? Complete pairs: 18 Left over: 1
--	--

	A jar holds 48 counters. Can they be shared equally between two groups? How many in each group? Yes / No Number in each group: 24
--	---

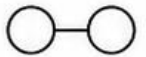
5. Create a four-digit even number and a four-digit odd number.
Circle each final digit.

Even number:	2	4	6	8	8
--------------	----------	----------	----------	----------	----------

Odd number:	1	3	3	7	7
-------------	----------	----------	----------	----------	----------



ODD AND EVEN NUMBER INVESTIGATION



Name: _____

1. Classify each number.

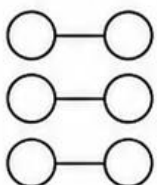
NUMBER	FINAL DIGIT	ODD OR EVEN?
12		
47		
80		
135		
246		
701		
1028		
3555		

2. Show what you know about pairs.

Draw 14 counters in pairs. Is 14 odd or even?
Explain.

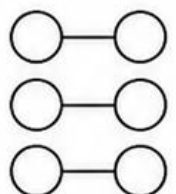
Draw 15 counters in pairs. Is 15 odd or even?
Explain.

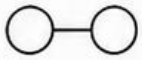
3. Complete the patterns.



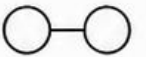
26, 28, 30, _____, _____, _____

41, 43, 45, _____, _____, _____





ODD AND EVEN NUMBER INVESTIGATION



ANSWERS

1. Classify each number.

NUMBER	FINAL DIGIT	ODD OR EVEN?
12	2	EVEN
47	7	ODD
80	0	EVEN
135	5	ODD
246	6	EVEN
701	1	ODD
1028	8	EVEN
3555	5	ODD

2. Show what you know about pairs.

Draw 14 counters in pairs. Is 14 odd or even?
Explain.

7 complete pairs = 14 counters

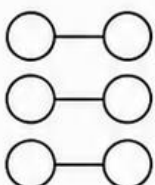
14 is even. No counter is left over.

Draw 15 counters in pairs. Is 15 odd or even?
Explain.

7 complete pairs + 1 counter = 15 counters

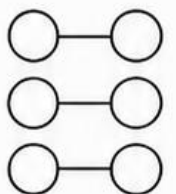
15 is odd. One counter is left over.

3. Complete the patterns.



26, 28, 30, 32, 34, 36

41, 43, 45, 47, 49, 51





ODD AND EVEN NUMBER INVESTIGATION



Name: _____



1. Predict, then calculate.

EXPRESSION	PREDICT ODD OR EVEN	ANSWER
$18 + 12$		
$27 + 14$		
$63 - 21$		
$84 - 39$		
$55 + 25$		

2. Mystery number

I am a three-digit number. My hundreds digit is 4. My tens digit is 7. My ones digit is 9.
Am I odd or even?

Number: _____ Odd or even: _____

3. Solve.

a. A theatre has 53 seats. The seats are placed in pairs.
How many complete pairs are there? How many seats are left over?

b. A teacher shares 64 counters equally between two groups.
How many counters are in each group? Is 64 odd or even?

4. Explain two different ways to decide whether a number is odd or even.





ODD AND EVEN NUMBER INVESTIGATION



ANSWERS



1. Predict, then calculate.

EXPRESSION	PREDICT ODD OR EVEN	ANSWER
$18 + 12$	EVEN	30
$27 + 14$	ODD	41
$63 - 21$	EVEN	42
$84 - 39$	ODD	45
$55 + 25$	EVEN	80

2. Mystery number

I am a three-digit number. My hundreds digit is 4. My tens digit is 7. My ones digit is 9.
Am I odd or even?

Number: 479 Odd or even: **ODD**

3. Solve.

a. A theatre has 53 seats. The seats are placed in pairs.
How many complete pairs are there? How many seats are left over?

26 complete pairs; 1 seat left over.

b. A teacher shares 64 counters equally between two groups.
How many counters are in each group? Is 64 odd or even?

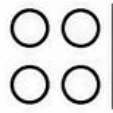
32 counters in each group; 64 is EVEN.

4. Explain two different ways to decide whether a number is odd or even.

Make equal pairs and check whether one is left over.

Or check the final digit: 0, 2, 4, 6 or 8 means even.





ODD AND EVEN NUMBERS RUBRIC

CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
Identifies odd and even numbers	Needs support to identify odd and even numbers; often inconsistent.	Identifies odd and even numbers with prompts or examples.	Correctly identifies odd and even numbers within the given range.	Accurately identifies odd and even numbers in a range and beyond.	Generalises to large numbers and unfamiliar examples with consistency.
Uses pairs and final-digit clues	Needs support to use pairs or final-digit clues; often inconsistent.	Uses pairs or final-digit clues with prompts to decide odd or even.	Uses pairs or final-digit clues to decide odd or even.	Works accurately using pairs and final-digit clues; explains useful cases.	Selects and combines clues flexibly and efficiently to solve unfamiliar problems.
Applies odd/even thinking to patterns and operations	Needs support to apply odd/even thinking; responses are inconsistent.	Applies odd/even thinking to simple patterns or operations with guidance.	Applies odd/even thinking to see patterns and operations tasks correctly.	Applies odd/even thinking accurately to patterns and operations explaining reasoning.	Generalises odd/even thinking to complex patterns and multi-step operations with unfamiliar numbers.
Explains mathematical reasoning	Needs support to explain reasoning; explanations are limited or unclear.	Provides simple explanations with prompts; reasoning is developing.	Explains reasoning clearly using pairs or final-digit clues with examples.	Explains reasoning clearly and uses mathematical language appropriately.	Justifies and generalises reasoning; connects ideas and applies to unfamiliar examples.

Odd and Even Numbers

PREFACE



Learning Intention

We are learning to identify, represent and explain odd and even numbers.

Success criteria

- make equal pairs
- use final digit
- continue patterns and solve problems



What Is a Pair?

A pair has exactly two objects.

When every object has a partner, the total is even.

When one object is left without a partner, the total is odd.



Even Numbers Make Complete Pairs

12 counters → 6 complete pairs → left over

12 is even.

Try it: Can 8 counters make complete pairs?



Odd Numbers Leave One Unpaired

13 counters $\rightarrow$ 6 complete pairs $\rightarrow$ 1 left over

13 is odd.

Try it: What happens when you pair 21 counters?



Use the Final Digit

For a whole number, only the final digit decides whether it is odd or even.

472 ends in 2, so 472 is even.

815 ends in 5, so 815 is odd.



Even Final Digit

A whole number is even when its final digit is:

0 2 4 6 8

Examples: 10, 12, 14, 16, 18



Odd Final Digits

A whole number is odd when its final digit is:

1 3 5 7 9

Examples 1, 57, 13 487



Patterns on a hundreds Chart

Odd and even numbers alternate across each row.

Numbers in one column have the same final digit.

Moving down by 10 keeps a number stays odd and even stays even.



Classify Large Numbers

Ignore every digit except the last one.

3 555 ends in 5 → odd

1 028 ends in even

4 008 ends in 8 → even



Skip-Count by Two

Even pattern: 0, 2, 4, 6, 8, 10, ...

Odd pattern: 1, 3, 5, 7, 9, 11, ...

Adding 2 keeps a number in the same odd-or-even group.



The 2 Times Table

Every product in the 2 times table is even.

$$2 \times 7 = 14$$

$$2 \times 18 = 36$$

Each product can be arranged into equal pairs.



Adding the Same Type

odd + odd = even

even + even = even

$$7 + 9 = 16$$

$$12 + 18 =$$



Adding Different Types

odd + even = odd

even + odd = odd

$$35 + 16 = 51$$

$$24 + 13 =$$



Subtraction Patterns

Same types give an even answer

Different types give an odd answer

$$44 - 20 = 24$$

$$31 - 12 =$$



Zero Is Even

Zero is even because it can be shared into two equal groups with no remainder.

Zero is also a multiple of 2:

$$2 \times 0 = 0$$



Worked Examples

246 ends in 6 $\rightarrow$ even

701 ends in 1 $\rightarrow$ odd

1 028 ends in 8 $\rightarrow$ even

3 555 ends in 5 $\rightarrow$ odd



Explain Your Reasoning

Mia says 4 507 is even because it contains a 0.

Mia is not correct. The first digit is 7, so 4 507 is odd.



Quick Check

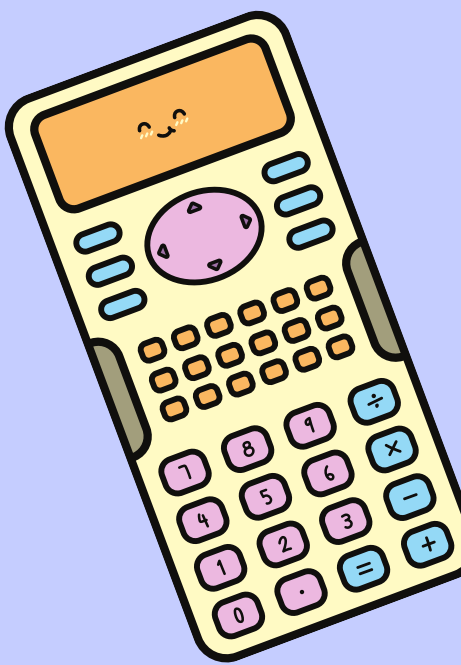
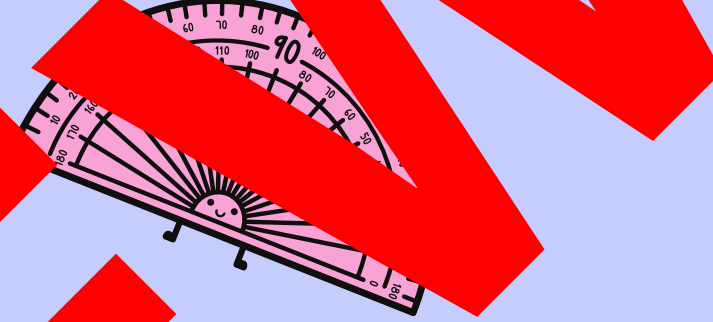
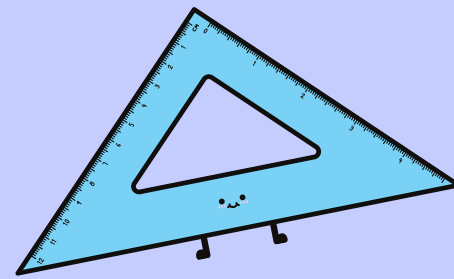
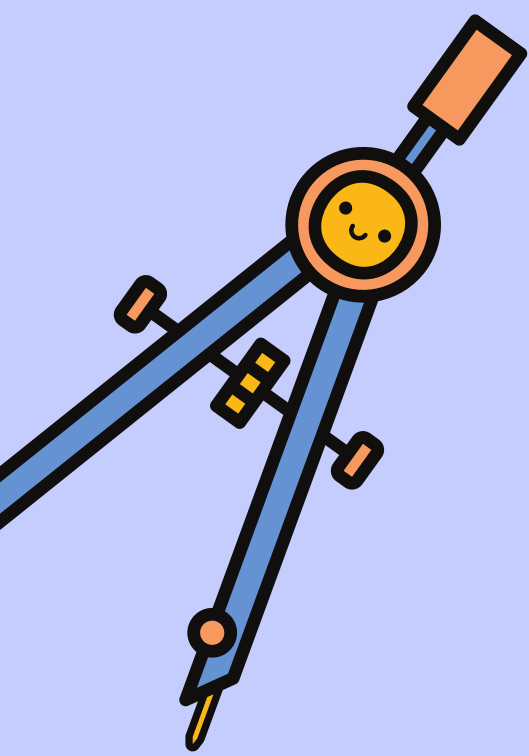
1. Classify 84, 135 and 4 008
2. Continue: 41, 43, 45, —, —, —
3. Predict: Will odd/even be odd or even?



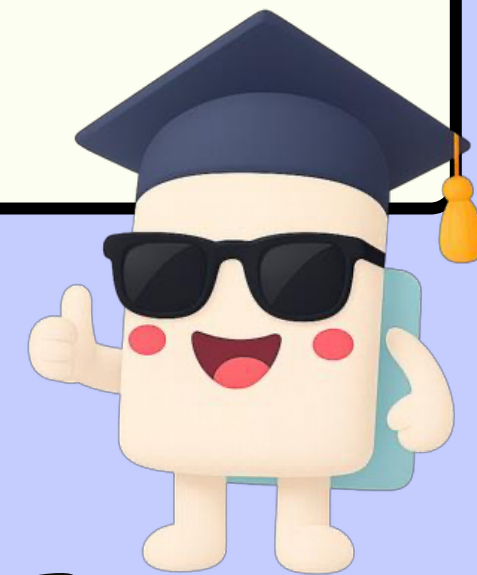
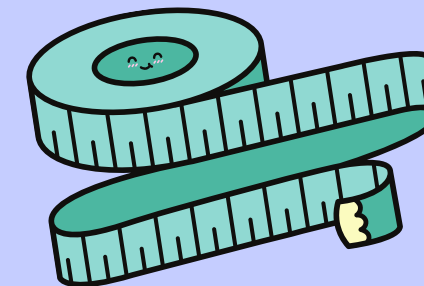
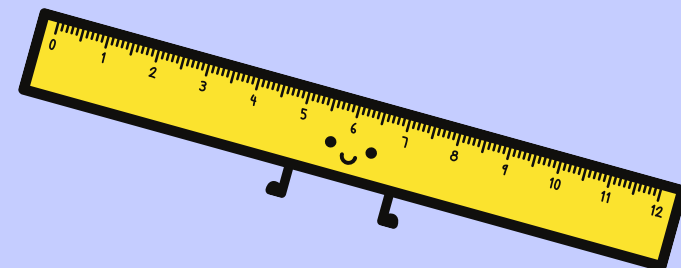
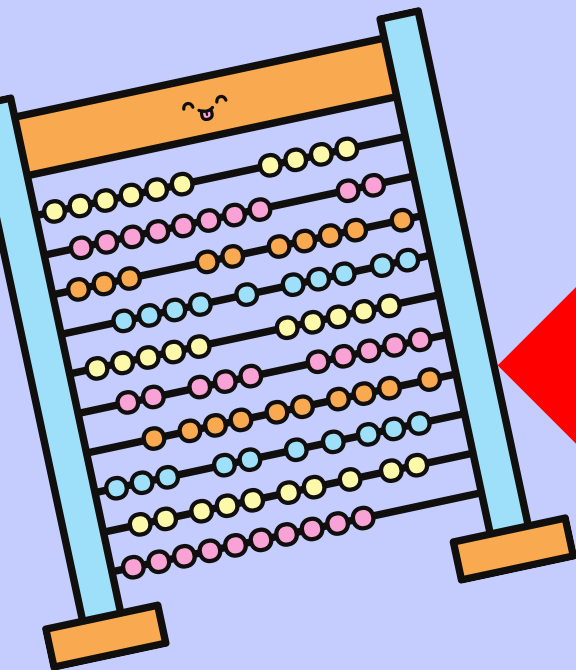
Quick Check Answers

1. 84 is even; 135 is odd; 4,008 is even.
2. 47, 49, 51
3. odd + even = odd





Well Done!



Question

True or false?

Zero is an even number



Answer

True.

Zero can be divided into two equal groups with no remainder.



Question 2

Which number is odd?

A 246 B 572 C 815 D 940



Answer 2

C – 815

Its final digit is 5, so it is odd.



Questions

What final digits show that a whole number is even?



Answers

0, 2, 4, 6 and 8



Question 4

Which number is even?

A 1 307 B 2 495 C 4 512 D 7 621



Answer 4

C – 4 812

Its final digit is 2, so it is even.



Questions

True or false?

Every product in the 2 times table is even.



Answers

True.

Every product can be arranged into equal pairs.



Question 6

A class packs 37 counters into pairs.

How many complete pairs are made?

How many counters are left over?



Answers

18 complete pairs and 1 counter left over.

Therefore, 37 is odd.



Question 7

Which expression has an odd result?

A $12 + 18$ B $35 \div 6$

C $44 - 20$ D 7×13



Answer

$$B - 35 + 16 = 51$$

51 is odd because its final digit is 1.



Question 8

Continue the even-number pattern.

46, 48, 50, __, __, __



Answers

52, 54, 56



Question 4

True or false?

A number is even if it contains any even digit.



Answer 1

False.

Only the final digit decides whether a whole number is odd or even.



Question 10

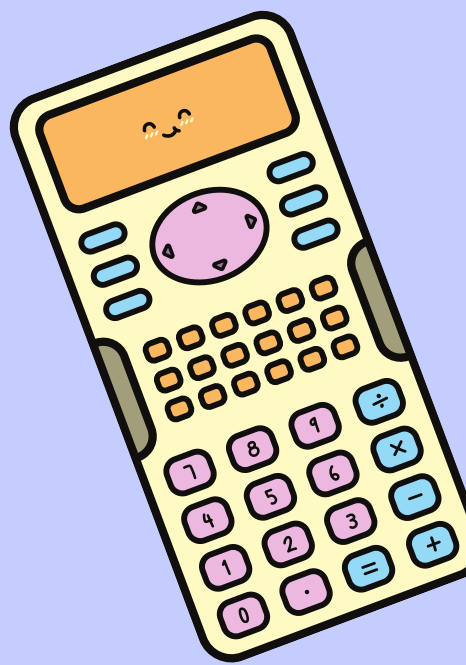
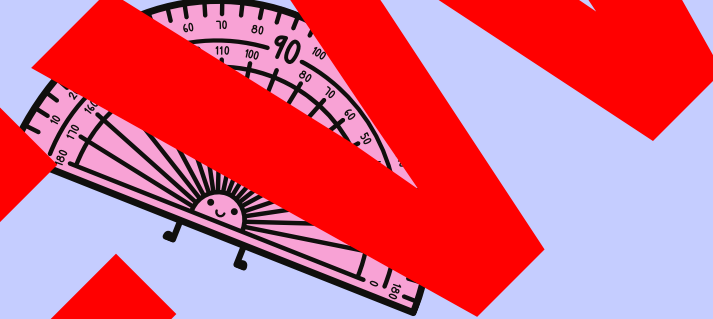
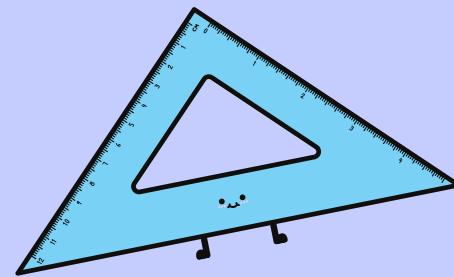
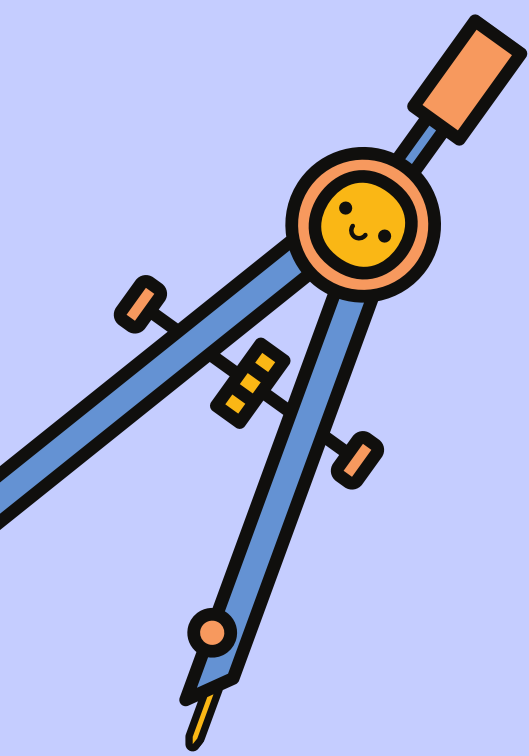
Explain two different ways to decide whether a whole number is odd or even.



Answer 10

1. Make equal pairs and check whether one is left over.
2. Check the final digit 0, 2, 4, 6 means even.





Well Done!

