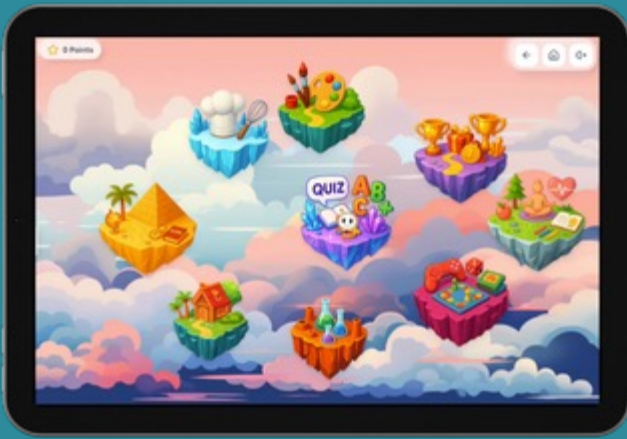


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Division With Remainders - Year 5

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DIVISION WITH REMAINDERS

$$47 \div 5 = 9 \text{ remainder } 2$$

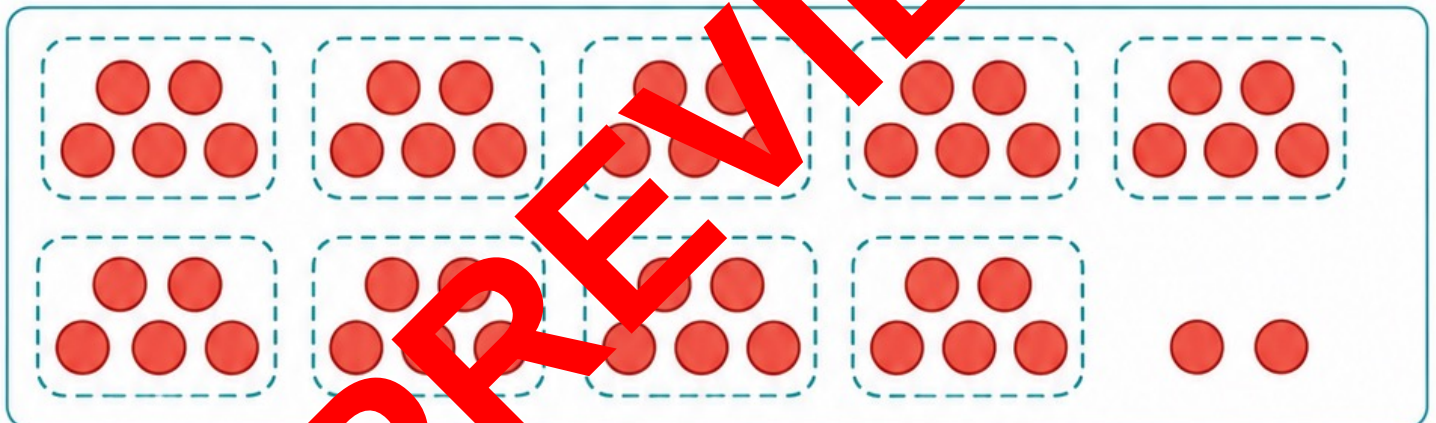
dividend $\div$ divisor = quotient remainder



The remainder is the whole-number amount left after equal grouping.



A remainder is always smaller than the divisor.

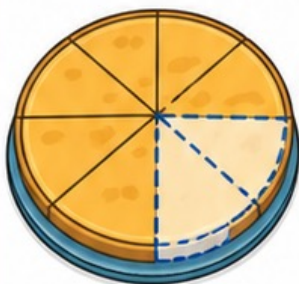


$$\text{Check: } 5 \times 9 + 2 = 47$$

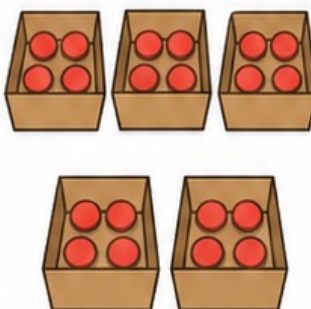
Keep it



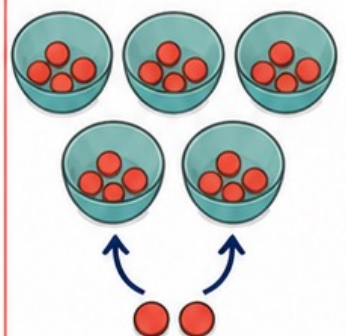
Round up



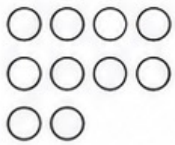
Use full groups only



Share the leftover



Name: _____



FINDING REMAINDERS

Calculate each quotient and remainder. Show your working.



1. $27 \div 4$

Quotient: _____ Remainder: _____

2. $52 \div 7$

Quotient: _____ Remainder: _____

3. $68 \div 6$

Quotient: _____ Remainder: _____

4. $95 \div 8$

Quotient: _____ Remainder: _____

5. $41 \div 3$

Quotient: _____ Remainder: _____

6. $73 \div 5$

Quotient: _____ Remainder: _____

7. $89 \div 9$

Quotient: _____ Remainder: _____

8. $124 \div 6$

Quotient: _____ Remainder: _____

9. $57 \div 7$

Quotient: _____ Remainder: _____

10. $203 \div 8$

Quotient: _____ Remainder: _____

11. $246 \div 9$

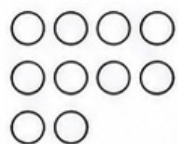
Quotient: _____ Remainder: _____

12. $318 \div 11$

Quotient: _____ Remainder: _____

PREVIEW

Name: **ANSWERS**



FINDING REMAINDERS

Calculate each quotient and remainder. Show your working.



1. $27 \div 4$

Quotient: 6 Remainder: 3

2. $52 \div 7$

Quotient: 7 Remainder: 3

3. $68 \div 6$

Quotient: 11 Remainder: 2

4. $95 \div 8$

Quotient: 11 Remainder: 7

5. $41 \div 3$

Quotient: 13 Remainder: 2

6. $73 \div 5$

Quotient: 14 Remainder: 3

7. $89 \div 9$

Quotient: 9 Remainder: 8

8. $124 \div 6$

Quotient: 20 Remainder: 4

9. $157 \div 7$

Quotient: 22 Remainder: 3

10. $203 \div 8$

Quotient: 25 Remainder: 3

11. $246 \div 9$

Quotient: 27 Remainder: 3

12. $318 \div 11$

Quotient: 28 Remainder: 10

PREVIEW

Name: _____



DIVIDE AND CHECK



Divide. Then check using $\text{divisor} \times \text{quotient} + \text{remainder} = \text{dividend}$.

1. $83 \div 6$

Answer: _____

Check: _____

2. $145 \div 7$

Answer: _____

Check: _____

3. $168 \div 7$

Answer: _____

Check: _____

4. $257 \div 8$

Answer: _____

Check: _____

5. $316 \div 9$

Answer: _____

Check: _____

6. $413 \div 8$

Answer: _____

Check: _____

7. $486 \div 12$

Answer: _____

Check: _____

8. $725 \div 11$

Answer: _____

Check: _____

PREVIEW

Name: **ANSWERS**



DIVIDE AND CHECK



Divide. Then check using divisor $\times$ quotient + remainder = dividend.

1. $83 \div 6$

Answer: **13 r5**

Check: **$6 \times 13 + 5 = 83$**

2. $145 \div 7$

Answer: **20 r5**

Check: **$7 \times 20 + 5 = 145$**

3. $168 \div 7$

Answer: **24**

Check: **$7 \times 24 = 168$**

4. $257 \div 8$

Answer: **32 r1**

Check: **$8 \times 32 + 1 = 257$**

5. $316 \div 9$

Answer: **35 r1**

Check: **$9 \times 35 + 1 = 316$**

6. $413 \div 8$

Answer: **51 r5**

Check: **$8 \times 51 + 5 = 413$**

7. $486 \div 12$

Answer: **40 r6**

Check: **$12 \times 40 + 6 = 486$**

8. $725 \div 11$

Answer: **65 r10**

Check: **$11 \times 65 + 10 = 725$**

Name: _____

WHAT DOES THE REMAINDER MEAN?



Solve each problem. Circle: keep it, round up, or full groups only. Then write the answer in context.

- 1** 92 cupcakes are packed into boxes that hold 8. How many boxes are needed for every cupcake?

Working:

keep it

round up

full groups only

Answer: _____

- 2** 74 students form teams of 6.
How many complete teams can be made, and how many students remain?



Working:

keep it

round up

full groups only

Answer: _____

- 3** 137 beads are placed into packets of 12.
How many full packets can be made, and how many beads remain?



Working:

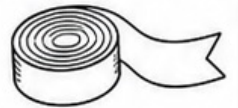
keep it

round up

full groups only

Answer: _____

- 4** 133 m ribbon is cut into complete 5 m lengths.
How many complete lengths can be cut?



Working:

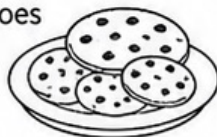
keep it

round up

full groups only

Answer: _____

- 5** 47 cookies are shared equally among 5 friends. How many cookies does each friend receive, and how many remain?



Working:

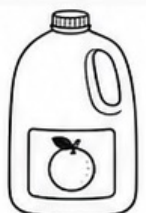
keep it

round up

full groups only

Answer: _____

- 6** 63 L of juice is poured into 8 L containers. How many containers are needed for all the juice?



Working:

keep it

round up

full groups only

Answer: _____

Name: **ANSWERS**

WHAT DOES THE REMAINDER MEAN?



Solve each problem. Circle: keep it, round up, or full groups only. Then write the answer in context.

- 1** 92 cupcakes are packed into boxes that hold 8. How many boxes are needed for every cupcake?

Working:

keep it

round up

full groups only

Answer: **12 boxes**

- 2** 74 students form teams of 6. How many complete teams can be made, and how many students remain?



Working:

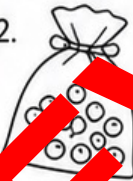
keep it

round up

full groups only

Answer: **12 teams, 2 students left**

- 3** 137 beads are placed into packets of 12. How many full packets can be made, and how many beads remain?



Working:

keep it

round up

full groups only

Answer: **11 full packets, 5 beads left**

- 4** A 3 m ribbon is cut into complete 5 m lengths. How many complete lengths can be cut?



Working:

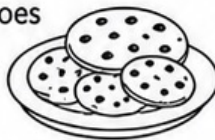
keep it

round up

full groups only

Answer: **0 complete lengths, 3 m left**

- 5** 47 cookies are shared equally among 5 friends. How many cookies does each friend receive, and how many remain?



Working:

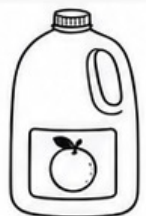
keep it

round up

full groups only

Answer: **9 cookies each, 2 left**

- 6** 63 L of juice is poured into 8 L containers. How many containers are needed for all the juice?



Working:

keep it

round up

full groups only

Answer: **8 containers**

THREE-DIGIT DIVISION WITH REMAINDERS

Use long division. Show each step and include any remainder.



Name: _____

1. $4 \overline{) 275}$

7. $6 \overline{) 355}$

2. $2 \overline{) 918}$

8. $4 \overline{) 641}$

3. $5 \overline{) 462}$

9. $7 \overline{) 823}$

4. $2 \overline{) 907}$

10. $2 \overline{) 437}$

5. $5 \overline{) 795}$

11. $8 \overline{) 765}$

6. $7 \overline{) 512}$

12. $3 \overline{) 421}$



THREE-DIGIT DIVISION WITH REMAINDERS

Use long division. Show each step and include any remainder.



Name: ANSWERS

1.
$$\begin{array}{r} 68 \text{ r}3 \\ 4 \overline{) 275} \end{array}$$

7.
$$\begin{array}{r} 59 \text{ r}1 \\ 6 \overline{) 355} \end{array}$$

2.
$$\begin{array}{r} 459 \\ 2 \overline{) 918} \end{array}$$

8.
$$\begin{array}{r} 16 \text{ r}1 \\ 4 \overline{) 64} \end{array}$$

3.
$$\begin{array}{r} 92 \text{ r}2 \\ 5 \overline{) 462} \end{array}$$

9.
$$\begin{array}{r} 117 \text{ r}4 \\ 7 \overline{) 823} \end{array}$$

4.
$$\begin{array}{r} 453 \\ 2 \overline{) 906} \end{array}$$

10.
$$\begin{array}{r} 218 \text{ r}1 \\ 2 \overline{) 437} \end{array}$$

5.
$$\begin{array}{r} 159 \\ 5 \overline{) 795} \end{array}$$

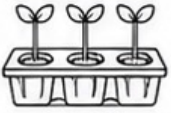
11.
$$\begin{array}{r} 95 \text{ r}5 \\ 8 \overline{) 765} \end{array}$$

6.
$$\begin{array}{r} 73 \text{ r}1 \\ 7 \overline{) 512} \end{array}$$

12.
$$\begin{array}{r} 140 \text{ r}1 \\ 3 \overline{) 421} \end{array}$$



Name: _____

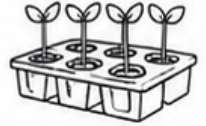


DIVISION WORD PROBLEMS



Solve. Show your working and explain what the remainder means.

1. A nursery has 184 seedlings. It places 12 seedlings in each tray.
How many full trays can be filled, and how many seedlings remain?



Answer: _____

2. An art club packs 267 art cards into packs of 8.
How many full packs can it make, and how many cards remain?



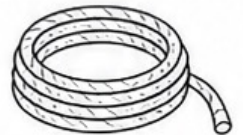
Answer: _____

3. A camp has 143 students. Each cabin holds 6 students.
How many cabins are needed so every student has a bed?



Answer: _____

4. A 356 m rope is cut into complete 9 m lengths.
How many complete lengths can be cut, and how many metres remain?



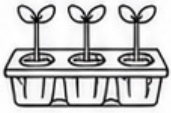
Answer: _____

5. A teacher shares 205 stickers equally among 6 students.
How many stickers does each student receive, and how many remain?



Answer: _____

Name: ANSWERS

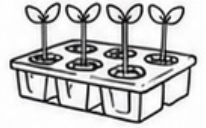


DIVISION WORD PROBLEMS

Solve. Show your working and explain what the remainder means.

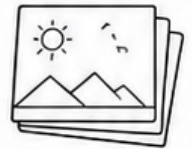


1. A nursery has 184 seedlings. It places 12 seedlings in each tray.
How many full trays can be filled, and how many seedlings remain?



Answer: 15 full trays, 4 seedlings left

2. An art club packs 267 art cards into packs of 8.
How many full packs can it make, and how many cards remain?



Answer: 33 full packs, 3 cards left

3. A camp has 143 students. Each cabin holds 6 students.
How many cabins are needed so every student has a bed?



Answer: 24 cabins are needed

4. A 356 m rope is cut into complete 9 m lengths.
How many complete lengths can be cut, and how many metres remain?



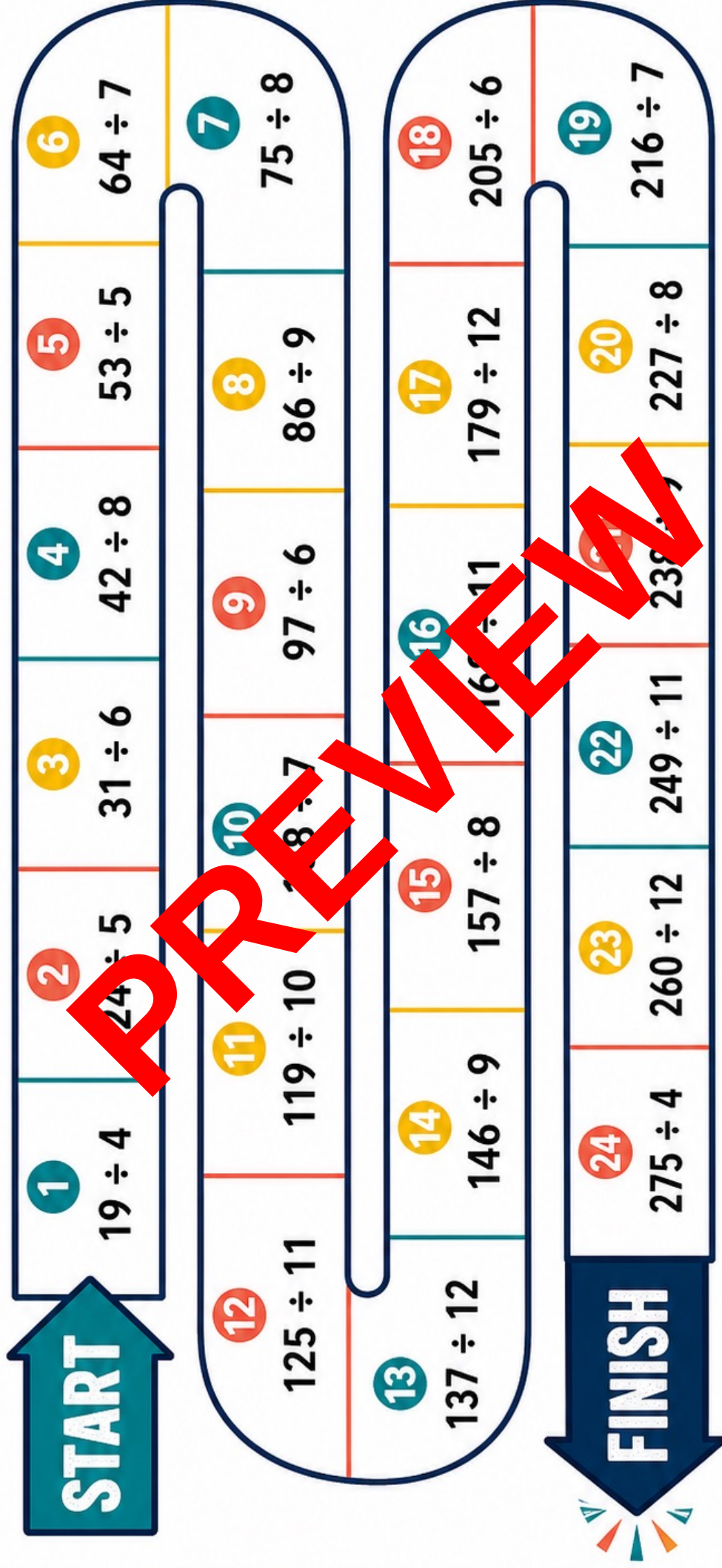
Answer: 39 complete lengths, 5 m left

5. A teacher shares 205 stickers equally among 6 students.
How many stickers does each student receive, and how many remain?



Answer: 34 stickers each, 1 left

REMAINDER RACE



Roll a die. Move. Solve the division.
Check that the remainder is smaller
than the divisor. Correct: stay.
Incorrect: move back one.





REMAINDER DECISION SORT



Cut out the cards. Solve each division. Sort by the remainder.

NO REMAINDER



REMAINDER 1



REMAINDER 2



REMAINDER
3 OR MORE



PREVIEW



$$24 \div 6$$



$$32 \div 5$$



$$41 \div 4$$



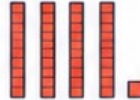
$$53 \div 6$$



$$63 \div 7$$



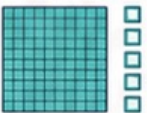
$$74 \div 8$$



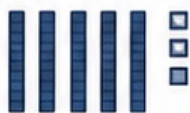
$$85 \div 9$$



$$96 \div 5$$



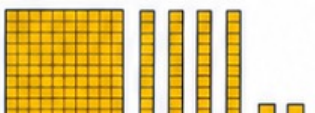
$$108 \div 9$$



$$117 \div 10$$



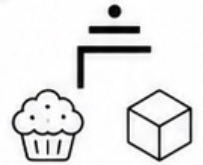
$$125 \div 11$$



$$143 \div 12$$

REMAINDER REASONING CHECK

Name: _____

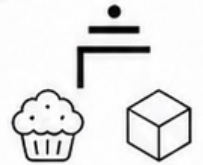


Show your working and answer in context.

1. What is a remainder?	
2. True or false: A remainder must be smaller than the divisor.	☐ True ☐ False
3. Calculate $83 \div 6$.	
4. Calculate $145 \div 7$. Check your answer using multiplication.	
5. The divisor is 8, the quotient is 17 and the remainder is 3. What is the dividend?	
6. Which has no remainder? A $156 \div 12$ B $157 \div 12$ C $158 \div 12$ D $159 \div 12$	
7. 92 cupcakes are packed into boxes of 8. How many boxes are needed for every cupcake?	
8. 74 students form teams of 6. How many complete teams can be made, and how many students remain?	
9. Correct this claim: $107 \div 9 = 11 \text{ r}9$.	
10. Explain why the same remainder can be used differently in different situations.	

REMAINDER REASONING CHECK

Name: ANSWERS



Show your working and answer in context.

1. What is a remainder?	The amount left after equal grouping.
2. True or false: A remainder must be smaller than the divisor.	☒ True ☐ False
3. Calculate $83 \div 6$.	13 r5
4. Calculate $145 \div 7$. Check your answer using multiplication.	20 r5; $7 \times 20 + 5 = 145$
5. The divisor is 8, the quotient is 17 and the remainder is 3. What is the dividend?	135
6. Which has no remainder? A $156 \div 12$ B $157 \div 12$ C $158 \div 12$ D $159 \div 12$	A — $156 \div 12 = 13$
7. 92 cupcakes are packed into boxes of 8. How many boxes are needed for every cupcake?	12 boxes
8. 74 students form teams of 6. How many complete teams can be made, and how many students remain?	12 teams and 2 students left
9. Correct this claim: $107 \div 9 = 11 \text{ r}9$.	11 r8; the remainder must be smaller than 9.
10. Explain why the same remainder can be used differently in different situations.	Some situations need another container; others ask for complete groups or equal shares.

DIVISION WITH REMAINDERS RUBRIC



CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
Calculates quotients and remainders	Needs support to divide.	Finds some quotient	Calculates accurate quotients and remainders.	Calculates accurately and efficiently.	Selects efficient strategies and verifies results.
Checks with multiplication	Needs support to check.	Uses a multiplication check with prompts	Uses multiplication and accounts for the remainder	Checks independently and explains the equation.	Uses checks to detect and correct errors.
Interprets remainders in context	Needs support to use a remainder.	Identifies the remainder in familiar contexts.	Chooses a sensible response in context.	Explains why the context changes the response.	Compares interpretations and justifies the best one.
Explains mathematical reasoning	Gives little working.	Shows some working.	Shows clear working and a relevant answer.	Uses precise language and connected steps.	Communicates flexible reasoning and evaluates the result.

Division With Remainders

PREVIEW



Learning Focus

By the end of this lesson, you will:

- model division as equal groups
- calculate a quotient and remainder
- explain what the remainder means in context



Division as Equal Groups

In $47 \div 5$:

- 47 is the dividend – the amount being divided
- 5 is the divisor – the size or number of groups
- 9 is the quotient – the equal groups
- 2 is the remainder – amount left over



Multiplication and Division

A related multiplication fact helps you estimate.

$$5 \times 9 = 45$$

$$5 \times 10 = 50$$

So $47 \div 5$ is between 9 and 10.



What Is a Remainder?

A remainder is the whole-number amount left over after equal grouping.

Rule: $0 \leq \text{remainder} < \text{divisor}$

A remainder of 3 is impossible when dividing by 5.



Model It

Model 47 counters in groups of 5.

9 equal groups use 45 counters.

2 counters are left.

$$47 \div 5 = 9 \text{ remainder } 2$$



Write and Check

Use this relationship:

divisor $\times$ quotient + remainder = dividend

$$5 \times 9 + 2 = 47$$

check: $5 \times 9 + 2 = 47$ for every counter.



Long Division

$$157 \div 6$$

6 goes into 15 two times. Subtract 12.

Bring down 7: $37 \div 6 = 6$ remainder 1.

$$157 \div 6 = 26 \text{ remainder } 1$$



Keep the Remainder

47 cookies are shared equally among 5 friends.

Each friend receives 9 cookies.

2 cookies remain.

The question is what is shared and what is left, so keep the remainder.



Round Up

98 students travel in buses that hold 24 students.

$$98 \div 24 = 4 \text{ remainder } 2$$

Four buses leave two students without seats, so round up to 5 buses.



Use Full Groups Only

137 beads are packed in groups of 12.

$$137 \div 12 = 11 \text{ remainder } 5$$

There are 11 full packets and 5 beads left. Count complete packets only.



Share the Leftover

Three leftovers are shared among four people.

$$3 \div 4 = 3/4$$

When parts are not whole, the leftover can be shared as a fraction of another group.



Error Detectives

Spot and correct each error:

- $83 \div 6 = 12 \text{ r}11$ — remainder is too large
- $145 \div 7 = 20 \text{ r}4$ — multiplication check fails
- 92 cupcakes in boxes of 3 — $92 \div 3 = 1 \text{ r}2$ — one more box is needed



Guided Practice

Calculate $413 \div 8$.

$$8 \times 51 = 408$$

$$413 - 408 = 5$$

$$413 \div 8 = 51 \text{ r } 5$$

$$\text{Check: } 8 \times 51 + 5 = 413$$



Exit Check

98 students travel in buses that hold 24.

How many buses are needed?

Show the division including the remainder and explain why your final answer is 5 buses.





Well Done!

PREVIEW

Division With Remainders

Quiz



Question 1

True or false?

A remainder must always be smaller than the divisor.

PREVIEW



Answer 1

True.

A whole-number remainder must be 0 or more and smaller than the divisor.



Question 2

What is $83 \div 6$?

A 12 r11 B 13 r5

C 14 r1 D 13 r6



Answer 2

B — 13 remainder 5

Check: $6 \times 13 + 5 = 83$



Question 3

Calculate $145 \div 7$.

Show a multiplication check.

PREVIEW



Answer 3

20 remainder 5

Check: $7 \times 20 + 5 = 145$



Question 4

92 cupcakes are packed into boxes that hold 8

How many boxes are needed to pack every cupcake?



Answer 4

12 boxes

11 boxes hold 88 cupcakes. The remaining cupcakes need one more box.



Question 5

True or false?

$107 \div 9 = 11 \text{ remainder } 8$

PREVIEW



Answer 5

True.

$$9 \times 11 + 8 = 107$$



Question 6

Which division has no remainder?

A $156 \div 12$ B $157 \div 12$

C $158 \div 12$ D $159 \div 12$



Answer 6

$$A - 156 \div 12 = 13$$

The remainder is 0.



Question 7

74 students form teams of 6.

How many complete teams can be made and how many students remain?



Answer 7

12 complete teams, with 2 students remaining.

$$6 \times 12 + 2 = 74$$



Question 8

A 53 m roll is cut into complete 5 m pieces.

How many complete pieces can be cut?



Answer 8

10 complete pieces, with 3 m left.

Only complete 5 m pieces are counted.



Question 9

A division has divisor 8, quotient 17 and remainder 3

What is the dividend?



Answer 9

139

$$8 \times 17 + 3 = 139$$

PREVIEW



Question 10

What is $205 \div 6$?

A 33 r7 B 34 r1

C 35 r5 D 34 r6



Answer 10

B — 34 remainder 1

Check: $6 \times 34 + 1 = 205$

PREVIEW





Well Done!

PREVIEW