# Reasoning and Problem Solving
# 9 Times Table and Division Facts

## National Curriculum Objectives:

**Mathematics Year 4: (4N1) Count in multiples of 6, 7, 9, 25 and 1000**
**Mathematics Year 4: (4C6a) Recall multiplication and division facts for multiplication tables up to 12 × 12**

## Differentiation:

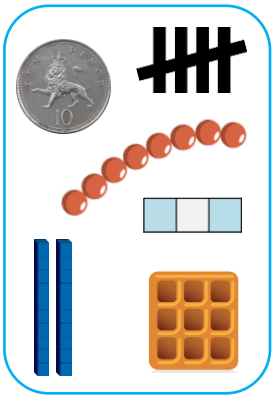
**Questions 1, 4 and 7 (Problem Solving)**
**Developing Use known facts of the 9 times table up to 12 x 9 to derive division facts and facts using multiples of 10. Pictorial support included.**
**Expected Use known facts of the 9 times table up to 12 x 9 to derive division facts and facts using multiples of 10 and 100.**
**Greater Depth Use known facts of the 9 times table up to 12 x 9 to derive division facts and facts using non-standard multiples. Includes two-step problems.**

**Questions 2, 5 and 8 (Problem Solving)**
**Developing Solve word problems using known facts of the 9 times table up to 12 x 9 to derive division facts. Also includes facts using multiples of 10. Pictorial support included.**
**Expected Solve word problems using known facts of the 9 times table up to 12 x 9 to derive division facts. Also includes facts using multiples of 10 and 100.**
**Greater Depth Solve two-step word problems using known facts of the 9 times table up to 12 x 9 to derive division facts. Also includes facts using multiples of 10 and 100.**

**Questions 3, 6 and 9 (Reasoning)**
**Developing Use clues to identify a mystery number using known facts of the 9 times table up to 12 x 9 to derive related division facts. Pictorial support included. Three multiple choice options provided.**
**Expected Use clues to identify a mystery number using known facts of the 9 times table up to 12 x 9 to derive related division facts. Three multiple choice options provided.**
**Greater Depth Use clues to identify a mystery number using known facts of the 9 times table up to 12 x 9 to derive related division facts and also facts using non-standard multiples. Includes two-step problems.**

# 9 Times Table and Division Facts

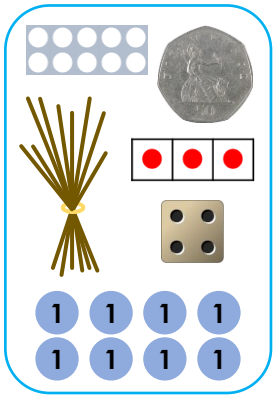
**1a. Use any of the amounts shown on the images below to complete the calculations correctly.**



| | | | | |
|---|---|---|---|---|
| 90 | ÷ | | = | 9 |
| | x | | = | 180 |
| 45 | = | | x | |

D PS

**1b. Use any of the amounts shown on the images below to complete the calculations correctly.**



| | | | | |
|---|---|---|---|---|
| 27 | = | | x | 9 |
| | x | | = | 72 |
| 450 | ÷ | | = | |

D PS

**2a. Three children take part in a football competition at school. For each goal they score, they receive 9 points.**

| | Total number of points |
|---|---|
| Bella | |
| Seb | |
| Karl | |

**How many goals did each child score?**

D PS

**2b. Three children take part in a netball tournament at school. For each goal they score, they receive 9 points.**

| | Total number of points |
|---|---|
| Ali | 10 10 10 1 1 1 1 1 1 |
| Holly | 10 1 1 1 1 1 1 1 1 |
| Isla | 10 10 10 10 10 10 10 10 10 |

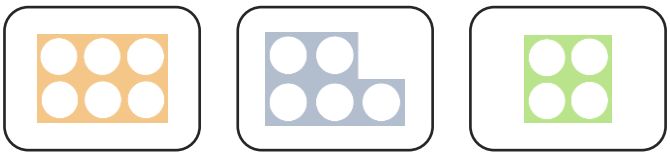
**How many goals did each child score?**

D PS

**3a. Noah says,**

I'm thinking of a number.
I multiply it by 9.
The result is less than 40 but more than 25.

A. B. C.



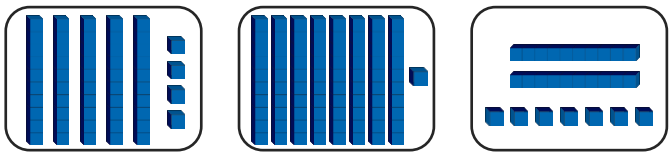
**What is Noah's number? Prove it.**

D R

**3b. Ellie says,**

I'm thinking of a number.
I divide it by 9.
The result is an even 1-digit number.

A. B. C.



**What is Ellie's number? Prove it.**

D R

# 9 Times Table and Division Facts

**4a. Use the numbers below to create four different calculations. Numbers may be used more than once.**

| | |
|---|---|
| 11 | 60 |
| 4 | 9 |
| 2 | 12 |
| 63 | 90 |
| 108 | 3 |

360 ÷ ☐ = ☐

☐ x 9 = ☐

99 = ☐ x ☐

☐ x ☐ = 540

E PS

**4b. Use the numbers below to create four different calculations. Numbers may be used more than once.**

| | |
|---|---|
| 60 | 90 |
| 630 | 50 |
| 270 | 9 |
| 4 | 720 |
| 100 | 210 |

8 x ☐ = ☐

900 ÷ ☐ = ☐

☐ ÷ 70 = ☐

810 = ☐ x ☐

E PS

**5a. Four children take part in a reading contest at school. For each whole book they read, they receive 90 points.**

| | Total number of points |
|---|---|
| Lucinda | 810 |
| Adam | 270 |
| Ricardo | 180 |
| Shania | 990 |

**How many whole books did each child read?**

E PS

**5b. Four children take part in a spelling contest. For each 9-letter word they spell correctly, they receive 90 tokens.**

| | Total number of tokens |
|---|---|
| Ronaldo | 360 |
| Maya | 450 |
| Aaron | 630 |
| Fliss | 720 |

**How many 9-letter words did each child spell correctly?**

E PS

**6a. Emily says,**

"I'm thinking of a number. When it is shared into nine equal groups, there will be more than 51 but less than 69 in each group."

| A. | B. | C. |
|---|---|---|
| 450 | 540 | 405 |

**What is Emily's number? Prove it.**

E R

**6b. Charlie says,**

"I'm thinking of a number. It is exactly divisible by 9 and it has double the amount of hundreds than tens."

| A. | B. | C. |
|---|---|---|
| 840 | 720 | 630 |

**What is Charlie's number? Prove it.**

E R

# 9 Times Table and Division Facts

**7a. Use the numbers below to create three different calculations. Numbers may be used more than once.**

□ = □ x □ x □

□ ÷ □ = □

□ x □ x □ = □

70 450 5 9 108 3 630 270 10

GD PS

**7b. Use the numbers below to create three different calculations. Numbers may be used more than once.**

□ ÷ □ = □

□ x □ x □ = □

□ ÷ □ ÷ □ = □

8 540 720 6 110 990 2 9 10

GD PS

**8a. Five children take part in a quiz at school. For each question they answer correctly, they receive 90 points.**

| | No. of correct questions in round 1 | No. of correct questions in round 2 | Overall score |
|---|---|---|---|
| Max | 5 | 0 | |
| Gina | 1 | 5 | |
| Jess | 4 | | 810 |
| Phil | 5 | 2 | |
| Saira | 7 | | 990 |

**Complete the table above.**

GD PS

**8b. Five children take part in a tennis tournament. For each serve they hit correctly, they receive 90 points.**

| | No. of correct serves in 1st game | No. of correct serves in 2nd game | Overall score |
|---|---|---|---|
| Stan | 2 | 7 | |
| Cara | | 1 | 180 |
| Olaf | 4 | | 720 |
| Elle | 0 | 6 | |
| Trev | | 2 | 270 |

**Complete the table above.**

GD PS

**9a. Kyron says,**

I'm thinking of a number. I multiply it by 9 and then double the answer. The result is 126.

**What is Kyron's number? Prove it.**

GD R

**9b. Jaida says,**

I'm thinking of an even number in the 9 times table. If you make this number eleven times larger, the result rounds up to a 4-digit number.

**What is Jaida's number? Prove it.**

GD R

# 9 Times Table and Division Facts

## Developing

**1a.** 90 ÷ 10 = 9; 20 x 9 = 180 and 45 = 5 x 9

**2a.** Bella = 3 goals; Seb = 6 goals and Karl = 1 goal

**3a.** Noah's number is 4 (C) because 4 x 9 = 36 and 36 is between 25 and 40.

## Expected

**4a.** Various answers, for example:
360 ÷ 4 = 90; 12 x 9 = 108; 99 = 11 x 9 and 60 x 9 = 540

**5a.** Lucinda = 9 books; Adam = 3 books; Ricardo = 2 books and Shania = 11 books

**6a.** Emily's number is 540 (B) because 540 ÷ 9 = 60 and 60 is more than 51 but less than 69.

## Greater Depth

**7a.** Various answers, for example:
450 = 9 x 5 x 10; 630 ÷ 70 = 9 and 9 x 3 x 10 = 270

**8a.**

| | No. of correct questions in round 1 | No. of correct questions in round 2 | Overall score |
|---|---|---|---|
| Max | 5 | 0 | 450 |
| Gina | 1 | 5 | 540 |
| Jess | 4 | 5 | 810 |
| Phil | 5 | 2 | 630 |
| Saira | 7 | 4 | 990 |

**9a.** Kyron's number is 7. 7 x 9 = 63 and 63 x 2 = 126.

## Developing

**1b.** 27 = 3 x 9; 9 x 8 = 72 and 450 ÷ 9 = 50

**2b.** Ali = 4 goals; Holly = 2 goals and Isla = 10 goals

**3b.** Ellie's number is 54 (A) because 54 ÷ 9 = 6 which is an even number.

## Expected

**4b.** Various answers, for example:
8 x 90 = 720; 900 ÷ 100 = 9; 630 ÷ 70 = 9 and 810 = 9 x 90

**5b.** Ronaldo = 4 words; Maya = 5 words; Aaron = 7 words and Fliss = 8 words

**6b.** Charlie's number is 630 (C) because 630 is between 600 and 800 and is divisible by 9.

## Greater Depth

**7b.** Various answers, for example:
990 ÷ 110 = 9; 6 x 9 x 10 = 540 and 720 ÷ 9 ÷ 10 = 8

**8b.**

| | No. of correct serves in 1st game | No. of correct serves in 2nd game | Overall score |
|---|---|---|---|
| Stan | 2 | 7 | 810 |
| Cara | 1 | 1 | 180 |
| Olaf | 4 | 4 | 720 |
| Elle | 0 | 6 | 540 |
| Trev | 1 | 2 | 270 |

**9b.** Jaida's number is 90. 90 is an even number in the 9 times table. 90 x 11 = 990 which when rounded up equals 1,000.