PART 3

UNIT 9

SPRING first half

NUMBER: PROPERTIES
PLACE VALUE

UNIT 9

NUMBER: PROPERTIES PLACE VALUE

SUGGESTED TIME **4 hours**

TEACHING OBJECTIVES

- Use symbols =, <, >, ≥, ≤.
- Order a set of whole numbers less than 1 million.
- Recognise square numbers to 12 × 12.
- Recognise multiples of 6, 7, 8, 9 up to the 10th multiple.
- Know and apply tests of divisibility of 2, 4, 5, 10 or 100.
- Identify factors of two-digit numbers.
- Make and investigate a general statement about numbers, by finding examples that satisfy it.

SECTION 1 Ordering numbers

SECTION 2 Multiples

SECTION 3 Tests of divisibility

SECTION 4 Factors

HOMEWORK

- Star Challenges 4 and 5 practise multiples of 2, 5 and 10.
- Star Challenge 9 consolidates prime numbers.
- Revise square numbers from Unit 1 and extend to, for example, 60 × 60.

Unit 9 Checklist for pupils

Ordering numbers

You will:

- order numbers ☐
- use =, <, >, ≥ and ≤ signs ☐

Multiples

You will:

- recognise multiples of 6, 7, 8 and 9 ☐
- learn multiplication tables ☐

Tests of divisibility

You will:

- divide two-digit numbers by 4 ☐
- know how to test if a number is divisible by 2, 4, 5, 10 or 100 ☐

Factors

You will:

- learn the meaning of 'factor'
- find factors of two-digit numbers ☐
- recognise prime numbers ☐

UNIT 9

SECTION 1: ORDERING NUMBERS

DIRECT TEACHING POINTS

- Use the most significant digit to order numbers.

Which is bigger?

(a) 437 or 473?

both numbers have 4 hundreds

4 3 7

4 7 3

7 tens (70) are more than 3 tens (30), so the bottom number is bigger

So 473 is bigger

(b) 5321 or 739?

5 3 2 1

five thousand and no thousands

7 3 9

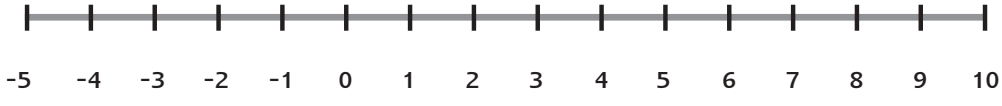
So 5321 is bigger

- Use a number line to help pupils visualise the relative positions of numbers and hence order them. Illustrate on a board or OHP with pupils marking numbers.

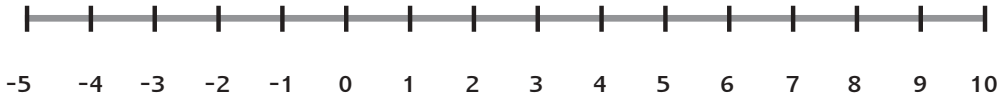
For example:

1 Circle each whole number greater than 4 and less than 10.

2 Circle each whole number greater than –2 and less than or equal to 3.



3 Circle each whole number greater than –4 and less than 4.



- Pupils need to be familiar with the symbols =, <, >, and then ≥, ≤.
- Explain key vocabulary including 'ascending' and 'descending'.

KEY VOCABULARY TO LEARN AND USE

equals *is equal to* = *is greater than* > *is less than* < *greatest* *largest* *biggest* *smallest* *least* *ascending* *descending* *order*

UNIT 9

Putting numbers into order

1 Ordering numbers

Example

Which is bigger?

(a) 437 or 473?

both numbers have 4 hundreds

4 3 7

4 7 3

7 tens (70) are more than 3 tens (30), so the bottom number is bigger

So 473 is bigger

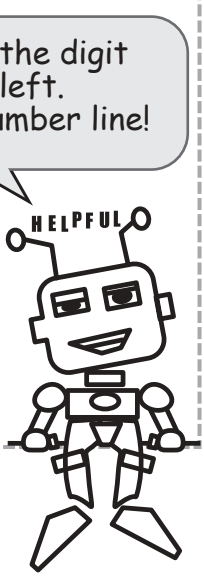
(b) 5321 or 739?

five thousand and no thousands

5 3 2 1

7 3 9

So 5321 is bigger



Circle the LARGEST number in each set.

1 86 68

2 357 537

3 2451 4251

4 3673 876

5 2649 2647

6 7439 7454

7 1824 1839 1799

8 6429 6492 6498

Circle the SMALLEST number in each set.

9 7035 7112

10 637 6037 6307

11 2481 898 1009

12 358 3508 3085

13 John swam 758 metres in 5 minutes.
Dave swam 857 metres in 5 minutes.
Who swam further? .....

UNIT 9

Putting numbers into order

2 > and < signs

2 < 3 means '2 is less than 3'

7 > 6 means '7 is greater than 6'

State whether each of these is TRUE (T) or FALSE (F).

1 $5 > 4$	2 $6 < 9$	3 $4 < 7$	4 $-5 > -4$	5 $-2 < -1$ .....

Put <, > or = into each ☐ to make a true sentence.

6 2 ☐ 3	7 3 ☐ 13	8 34 ☐ 27	9 12 ☐ 21

10 One hundred and one ☐ 101

11 One thousand and one ☐ 101

3 ≥ and ≤ signs

≤ means 'less than or equal to'

1 Circle those numbers that are ≤ 50.

45 73 50 49

92 38 69 29

≥ means 'greater than or equal to'

2 Circle those numbers that are ≥ 150.

145 78 161 249

155 94 150 179

UNIT 9

Putting numbers into order

STAR CHALLENGE 1

Ordering problems

All correct 1 star

Put these numbers in ASCENDING order.

1 36 63 58 85 65 (1 mark)

....

2 809 99 109 901 89 (1 mark)

....

Put these numbers in DESCENDING order.

3 54 505 55 550 500 (1 mark)

....

4 231 321 203 2031 302 (1 mark)

....

5 Plymouth is 241 miles from London. York is 212 miles from London.

Which of these two towns is the GREATER distance from London? (1 mark)

.....

6 Perth is 544 miles from Dover. Glasgow is 497 miles from Dover.

Which of these two towns is the LESSER distance from Dover? (1 mark)

.....

7 Plymouth is 336 miles from Leeds. Aberdeen is 335 miles from Leeds.

(a) Which of these two towns is the FURTHER from Leeds? (2 marks)

.....

(a) How much further is it?

.....

(2 marks)

8

Lottery winners

Mary Green won £23 546

Joe Brown won £23 564

Dave Black won £22 768

(a) Who won the most?

.....

(b) Who won the least?

.....

UNIT 9

Putting numbers into order

STAR CHALLENGE 2

Ordering numbers using < and >

All correct 1 star

We can put 2, 11, 3, 7 in order of size as

2 < 3 < 7 < 11

with the smallest number first.

Do the same with:

1 46, 64, 35, 53, 56, 65

2 53, 35, 351, 531, 503

We can put 2, 11, 3, 7 in order of size as

11 > 7 > 3 > 2

with the largest number first.

Do the same with:

3 32, 23, 34, 43, 42

4 456, 546, 654, 465, 564

UNIT 9

SECTIONS 2, 3 AND 4: MULTIPLES TESTS OF DIVISIBILITY FACTORS

DIRECT TEACHING POINTS

- Pupils need to understand and use the language of multiples and factors.
- Exercises 1 and 2 give the opportunity to reinforce multiples. It may be preferable to concentrate on one set at a time, such as multiples of 6, then multiples of 7, and so on.
- Exercise 3 consolidates mental addition and subtraction.
- Star Challenge 3 encourages pupils to develop their mathematical reasoning. You need to discuss pupils' explanations.
- Pupils should be familiar with tests of divisibility for 2, 5 and 10. Section 3 exercise 1 and Star Challenges 4 and 5 can serve as revision.
- Revise the 4 times table and halving as an introduction to the test of divisibility for 4.
- You need to explain the test of divisibility for 4. *Four is a factor of 100, hence you need only to test the number formed by the last two digits*, as in exercise 3.
- You can extend tests of divisibility to include 3, 6 and 9.
- Section 4 exercises 1 and 2 and Star Challenges 7 and 8 provide practice in identifying factors of numbers.
- Reinforce multiplication bonds and the corresponding division facts, for example, 8 × 7 = 56, 56 ÷ 7 = 8, 56 ÷ 8 = 7.
- Teach prime numbers as *numbers having two, and only two factors:* emphasise that 1 is not a prime number.

prime number *multiple* *factor*
divide *divisible* *divisibility*

UNIT 9

Multiples of numbers

1 Multiples of 6 and 7

Multiples of 6 are: **6 12 18 ...**

Multiples of 7 are: **7 14 21 ...**

A: Shade multiples of 6

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	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81

B: Shade multiples of 6

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
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90

C: Shade multiples of 7

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	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96

D: Shade multiples of 7

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	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96	97	98

UNIT 9

Multiples of numbers

2 Multiples of 8 and 9

Multiples of 8 are: **8 16 24 ...**

Multiples of 9 are: **9 18 27 ...**

E: Shade multiples of 8

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	51	52	53	54
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98										

F: Shade multiples of 8

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	51	52	53	54	55	56
57	58	59	60	61	62	63
64	65	66	67	68	69	70
71	72	73	74	75	76	77
78	79	80	81	82	83	84
85	86	87	88	89	90	91

G: Shade multiples of 9

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
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	

H: Shade multiples of 9

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	51	52	53	54	55
56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77
78	79	80	81	82	83	84	85	86	87	88

UNIT 9

Multiples of numbers

3 Counting on and back in 6s, 7s, 8s and 9s

Fill in the rule and extend each of these sequences.

1	Rule: add 8	5	13	.....	.....	.....	.....	.....
2	Rule: add	8	15	.....	.....	.....	.....	.....
3	Rule: add	21	27	.....	.....	.....	.....	.....
4	Rule: subtract	73	64	.....	.....	.....	.....	.....
5	Rule: subtract	32	24	.....	.....	.....	.....	.....
6	Rule: add	–16	–10	.....	.....	.....	.....	.....
7	Rule: add	7	16	.....	.....	.....	.....	.....
8	Rule: add	–9	–3	.....	.....	.....	.....	.....
9	Rule: subtract	32	26	.....	.....	.....	.....	.....
10	Rule: add	20	29	.....	.....	.....	.....	.....

STAR CHALLENGE

3 Statements about multiples

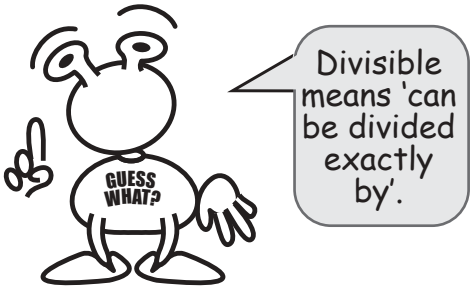
6 correct 1 star

Write down if each statement is True (T) or False (F).
If it is true, explain how you know.
If it is false, give an example to show it is false.

		T or F	Example or explanation
1	Multiples of 6 are all even.	.....	.....
	.....		
2	Multiples of 7 are all even.	.....	.....
	.....		
3	Multiples of 8 end in 1, 3, 5, 7 or 9.	.....	.....
	.....		
4	Multiples of 6 end in 0, 2, 4, 6 or 8.	.....	.....
	.....		
5	In multiples of 9 less than 100, the digits always add up to 9.	.....	.....
	.....		
6	In multiples of 7 less than 100, the digits always add up to 7.	.....	.....
	.....		

Testing for divisibility

1 Numbers divisible by 2, 5, 10 or 100



1 Eight of these numbers are divisible by 10. Circle them.

60	75	30	36	70	45	69	100
95	40	300	125	240	450	35	

2 Eight of these numbers are divisible by 5. Circle them.

52	55	70	19	80	23	69	20
85	44	900	225	314	128	15	

3 Eight of these numbers are divisible by 2. Circle them.

24	15	40	16	71	35	68	201
17	28	567	678	120	561	2472	

4 Eight of these numbers are divisible by 100. Circle them.

605	750	30	360	700	45	1300	100
9100	400	3000	125	2000	450	750 000	

UNIT 9

Testing for divisibility

2 Dividing 2-digit numbers by 4

To divide by 4, halve the number, then halve it again.

1 $12 \div 4 =$ ..... 3 $36 \div 4 =$ ..... 5 $84 \div 4 =$ ..... 7 $52 \div 4 =$ .....

2 $44 \div 4 =$ ..... 4 $68 \div 4 =$ ..... 6 $20 \div 4 =$ ..... 8 $92 \div 4 =$ .....

3 Test of divisibility by 4

A number is divisible by 4, if dividing by 4 gives a whole number.

Example

Is 72 divisible by 4?

Half of 72 = 36

Half of 36 = 18

So 72 is divisible by 4

Example

Is 86 divisible by 4?

Half of 86 = 43

Half of 43 = $21\frac{1}{2}$

So 86 is *not* divisible by 4

1 Is 56 divisible by 4? .....

2 Is 88 divisible by 4? .....

3 Is 9 divisible by 4? .....

4 Is 26 divisible by 4? .....

If a large number is divisible by 4, its last two digits are divisible by 4.

5 Eight of the numbers below are divisible by 4. Circle them.

240	315	420	1680	710	346	6888	2030
1555	2442	5672	6728	1200	561	2436	

Testing for divisibility

STAR CHALLENGE 4

Using divisibility tests

★

22–24 correct 1 star

Number	divisible by 2	divisible by 10	divisible by 5	divisible by 4
65	No	No	Yes	No
90	.....	.....	.....	.....
36	.....	.....	.....	.....
57	.....	.....	.....	.....
435	.....	.....	.....	.....
390	.....	.....	.....	.....
7544	.....	.....	.....	.....

STAR CHALLENGE 5

Divisibility challenge!

★★

29–30 correct 2 stars
25–28 correct 1 star

24	47	29	85
70	38	73	
95	22	452	711
215	666	999	
4545	8432	631	123
252	170	290	
205	275	746	649
570	891	639	
3390	1437	2389	542

1 Write down all the numbers here that are divisible by 10. (There are 5.) Put them in order.

2 Write down all the numbers here that are divisible by 5. (There are 11.) Put them in order.

3 Write down all the numbers here that are divisible by 2. (There are 14.) Put them in order.

UNIT 9

Testing for divisibility

STAR CHALLENGE 6

'Divisibility' and 'multiples of'

4–5 correct 1 star

1 Write down all the multiples of 10 between 14 and 52.

.....

2 Write down all the multiples of 3 between 10 and 20.

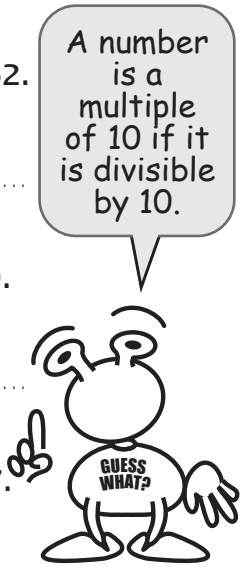
.....

3 Write down all the multiples of 5 between 17 and 57.

.....

4 Write down all the multiples of 7 between 20 and 30.

.....



5 Circle the 4 numbers below that are multiples of 3 and multiples of 5.

45	39	30	
85	75	24	60

6 Circle the 5 numbers below that are multiples of 6 and multiples of 5.

50	90	30	40	60
150	45	65	120	

Factors

1 Factor pairs

Example

$2 \times 3 = 6$

2 is a factor of 6 | 3 is a factor of 6

2 and 3 are a factor pair of 6

$1 \times 6 = 6$

1 is a factor of 6 | 6 is a factor of 6

1 and 6 are a factor pair of 6

The factors of 6 are 1, 2, 3, 6

1 $18 = 1 \times 18$ ..... and ..... are factors of 18

$18 = 2 \times 9$ ..... and ..... are factors of 18

$18 = 3 \times$ .... and ..... are factors of 18

2 $20 = 1 \times$ .....

$20 = 2 \times$ ..... The factors of 20 are ....

$20 =$ ..... $\times$ ....

3 $24 = 1 \times$ .....

$24 = 2 \times$ .....

$24 =$ ..... $\times$ ..... The factors of 24 are ....

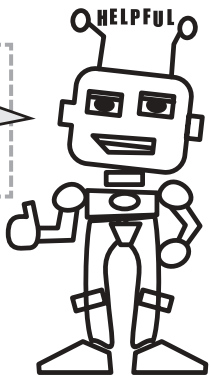
$24 =$ ..... $\times$ ....

Example

Repeated factors $9 = 1 \times 9$

$9 = 3 \times 3$

The factors of 9 are 1, 3, and 9. We write the 3 down only once.



4 $36 = 1 \times$ .....

$36 = 2 \times$ .....

$36 =$ ..... $\times$ ..... The factors of 36 are ....

$36 =$ ..... $\times$ ....

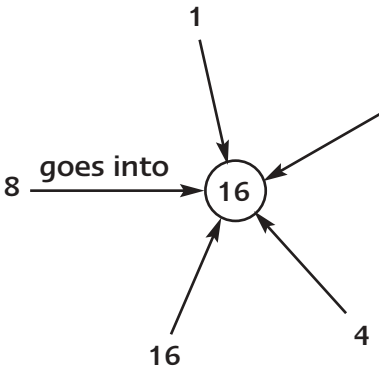
$36 =$ ..... $\times$ ....

UNIT 9

Factors

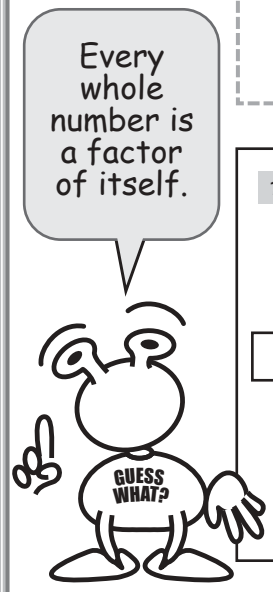
2 Factors

Example

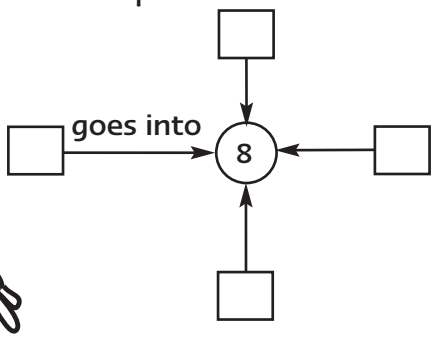


This is a factor diagram for 16.

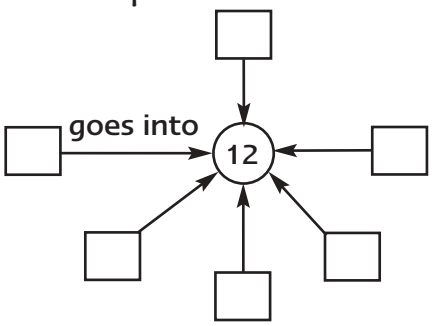
The factors of 16 are 1, 2, 4, 8, 16.



1 Complete:



2 Complete:



3 6 has four factors. Find all the factors of 6. ....

4 49 has three factors. Find all the factors of 49. ....

5 Complete:

The factors of 20 are .....

.....

6 Complete:

The factors of 30 are .....

.....

UNIT 9

Factors

STAR CHALLENGE 7

Factor diagrams

★★

13 correct 2 stars
11–12 correct 1 star

Complete each of these factor diagrams:

1

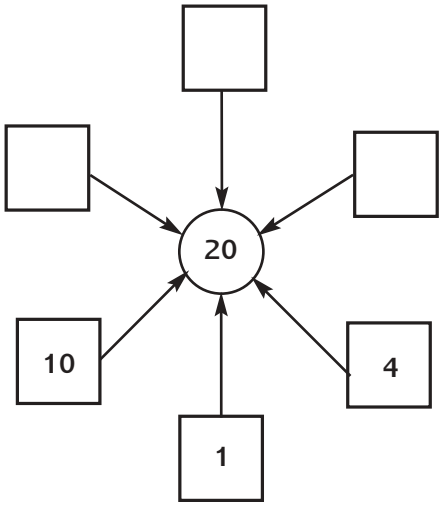


Diagram 1

(4 marks)

2

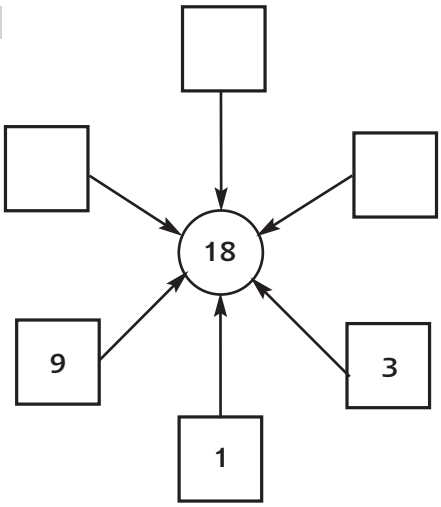


Diagram 2

(4 marks)

3

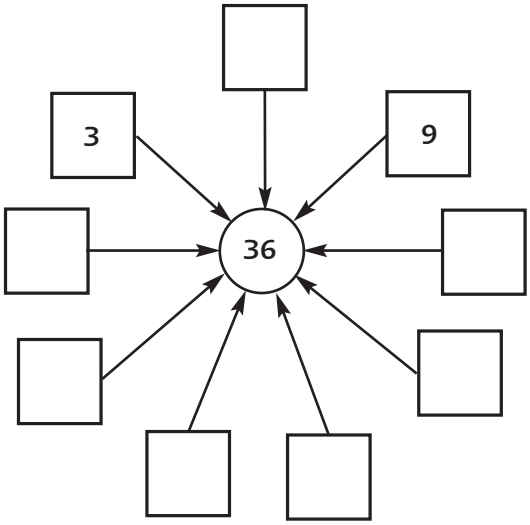


Diagram 3

(8 marks)

UNIT 9

Factors

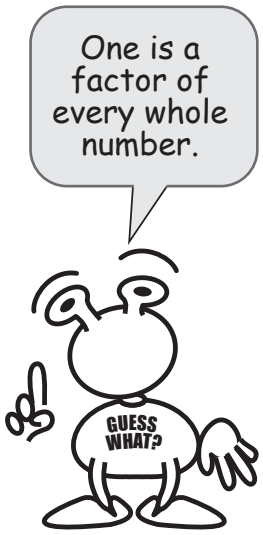
STAR CHALLENGE 8

Factors

7–8 correct 2 stars
5–6 correct 1 star

Find all the factors of:

1 8 .....
2 12 .....
3 16 .....
4 27 .....
5 30 .....
6 40 .....
7 49 .....
8 50 .....



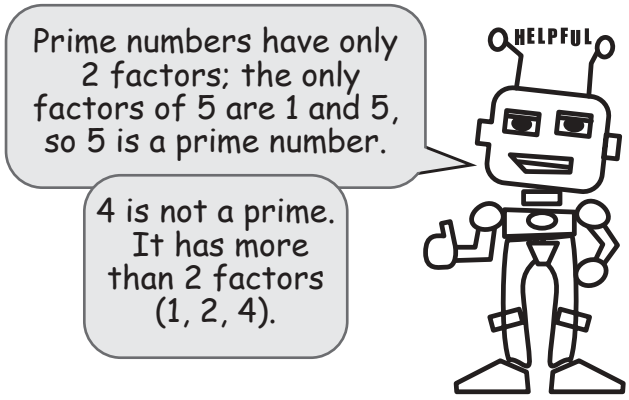
STAR CHALLENGE 9

Prime numbers

9–10 correct 2 stars
7– 8 correct 1 star

List 10 prime numbers.

....
....
....
....
....



UNIT 9

Unit 9 Answers

Section 1 Putting numbers into order

1 Ordering numbers

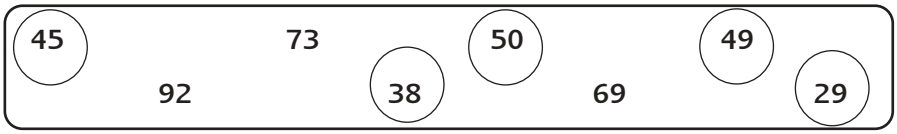
1 86
2 537
3 4251
4 3673
5 2649
6 7454
7 1839
8 6498
9 7035
10 637
11 898
12 358
13 Dave

2 > and < signs

1 T
2 T
3 T
4 F
5 T
6 <
7 <
8 >
9 <
10 =
11 >

3 ≥ and ≤ signs

1



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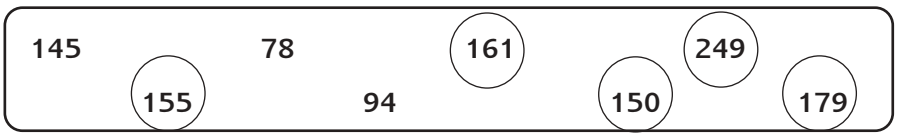

UNIT 9

Unit 9 Answers

Section 2 Multiples of numbers

1 Multiples of 6 and 7

A: Shade multiples of 6

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	51	52	53	**54**
55	56	57	58	59	**60**	61	62	63
64	65	**66**	67	68	69	70	71	**72**
73	74	75	76	77	**78**	79	80	81

B: Shade multiples of 6

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
51	52	53	**54**	55
56	57	58	59	**60**
61	62	63	64	65
66	67	68	69	70
71	**72**	73	74	75
76	77	**78**	79	80
81	82	83	**84**	85
86	87	88	89	**90**

C: Shade multiples of 7

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	51	52	53	54
55	**56**	57	58	59	60
61	62	**63**	64	65	66
67	68	69	**70**	71	72
73	74	75	76	**77**	78
79	80	81	82	83	**84**
85	86	87	88	89	90
91	92	93	94	95	96

D: Shade multiples of 7

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	51	52	53	54	55	**56**
57	58	59	60	61	62	**63**	64	65	66	67	68	69	**70**
71	72	73	74	75	76	**77**	78	79	80	81	82	83	**84**
85	86	87	88	89	90	**91**	92	93	94	95	96	97	**98**

2 Multiples of 8 and 9

E: Shade multiples of 8

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	51	52	53	54
55	**56**	57	58	59	60	61	62	63	**64**	65	66	67	68	69	70	71	**72**
73	74	75	76	77	78	79	**80**	81	82	83	84	85	86	87	**88**	89	90
91	92	93	94	95	**96**	97	98										

F: Shade multiples of 8

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	51	52	53	54	55	**56**
57	58	59	60	61	62	63
64	65	66	67	68	69	70
71	**72**	73	74	75	76	77
78	79	**80**	81	82	83	84
85	86	87	**88**	89	90	91

G: Shade multiples of 9

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
51	52	53	**54**	55	56	57	58	59	60
61	62	**63**	64	65	66	67	68	69	70
71	**72**	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	**90**
91	92	93	94	95	96	97	98	**99**	

H: Shade multiples of 9

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	51	52	53	**54**	55
56	57	58	59	60	61	62	**63**	64	65	66
67	68	69	70	71	**72**	73	74	75	76	77
78	79	80	**81**	82	83	84	85	86	87	88

UNIT 9

Unit 9 Answers

Multiples of numbers *continued*

3 Counting on and back in 6s, 7s, 8s and 9s

1		5	13	21	29	37	45	53
2	add 7	8	15	22	29	36	43	50
3	add 6	21	27	33	39	45	51	57
4	subtract 9	73	64	55	46	37	28	19
5	subtract 8	32	24	16	8	0	–8	–16
6	add 6	–16	–10	–4	2	8	14	20
7	add 9	7	16	25	34	43	52	61
8	add 6	–9	–3	3	9	15	21	27
9	subtract 6	32	26	20	14	8	2	–4
10	add 9	20	29	38	47	56	65	74

Section 3 Testing for divisibility

1 Numbers divisible by 2, 5, 10 or 100

1 10

(60) 75 (30) 36 (70) 45 69 (100)

95 (40) (300) 125 (240) (450) 35

2 5

52 (55) (70) 19 (80) 23 69 (20)

(85) 44 (900) (225) 314 128 (15)

3 2

(24) 15 (40) (16) 71 35 (68) 201

17 (28) 567 (678) (120) 561 (2472)

4 100

605 750 30 360 (700) 45 (1300) (100)

(9100) (400) (3000) 125 (2000) 450 (750 000)

Unit 9 Answers

Testing for divisibility *continued*

2 Dividing 2-digit numbers by 4

1 3
2 11
3 9
4 17
5 21
6 5
7 13
8 23

3 Test of divisibility by 4

1 Yes
2 Yes
3 No
4 No
5 (240) 315 (420) (1680) 710 346 (6888) 2030
1555 2442 (5672) (6728) (1200) 561 (2436)

Section 4 Factors

1 Factor pairs

1 1 and 18
2 and 9
6, 3 and 6

2 1 × 20 Factors of 20 are 1, 20, 2, 10, 4, 5
2 × 10
4 × 5

3 1 × 24 Factors of 24 are 1, 24, 2, 12, 3, 8, 4, 6
2 × 12
3 × 8
4 × 6

4 1 × 36 Factors of 36 are 1, 36, 2, 18, 3, 12, 4, 9, 6
2 × 18
3 × 12
4 × 9
6 × 6

2 Factors

1 Factors of 8 are 1, 8, 2, 4
2 Factors of 12 are 1, 12, 2, 6, 3, 4
3 1, 2, 3, 6
4 1, 49, 7
5 1, 2, 4, 5, 10, 20
6 1, 2, 3, 5, 6, 10, 15, 30

UNIT 9

Unit 9 Answers

Star Challenge answers

Ordering problems

All correct 1 star

1. 36 58 63 65 85
2. 89 99 109 809 901
3. 550 505 500 55 54
4. 2031 321 302 231 203
5. Plymouth
6. Glasgow
7. (a) Plymouth (b) 1 mile
8. (a) Joe Brown (b) Dave Black

Ordering numbers using < and >

All correct 1 star

1. $35 < 46 < 53 < 56 < 64 < 65$
2. $35 < 53 < 351 < 503 < 531$
3. $43 > 42 > 34 > 32 > 23$
4. $654 > 564 > 546 > 465 > 456$

Statements about multiples

6 correct 1 star

1. True multiples are 6, 12, 18, 24, 30, ...
   (or any reasonable explanation)
2. False example such as $3 \times 7 = 21$
3. False example such as $2 \times 8 = 16$
4. True multiples are 6, 12, 18, 30, 36, 42, 48, 54, 60 ...
   (or any reasonable explanation)
5. False 99
6. False example such as $2 \times 7 = 14$ and $1 + 4$ is not equal to 7

Using divisibility tests

22–24 correct 1 star

Number	divisible by 2	divisible by 10	divisible by 5	divisible by 4
90	*Yes*	*Yes*	*Yes*	*No*
36	Yes	No	No	Yes
57	No	No	No	No
435	No	No	Yes	No
390	Yes	Yes	Yes	No
7544	Yes	No	No	Yes

UNIT 9

Unit 9 Answers

Star Challenge answers *continued*

STAR CHALLENGE 5

Divisibility challenge!

29–30 correct 2 stars
25–28 correct 1 star

1 70 170 290 570 3390

2 70 85 95 170 205 215 275 290 570 3390 4545

3 22 24 38 70 170 252 290 452 542 570 666 746 3390 8432

STAR CHALLENGE 6

'Divisibility' and 'multiples of'

4–5 correct 1 star

1 20 30 40 50

2 12 15 18

3 20 25 30 35 40 45 50 55

4 21 28

5 (45) (30) (75) (60)

6 (30) (60) (90) (120) (150)

STAR CHALLENGE 7

Factor diagrams

13 correct 2 stars
11–12 correct 1 star

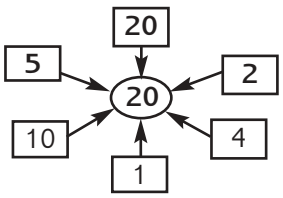

Diagram 1

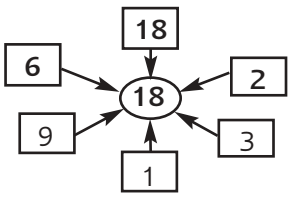

Diagram 2

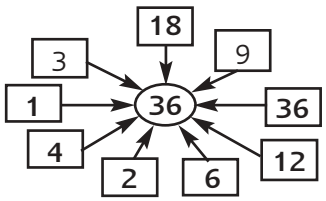

Diagram 3

STAR CHALLENGE 8

Factors

7–8 correct 2 stars
5–6 correct 1 star

1 1 2 4 8

2 1 2 3 4 6 12

3 1 2 4 8 16

4 1 3 9 27

5 1 2 3 5 6 10 15 30

6 1 2 4 5 8 10 20 40

7 1 7 49

8 1 2 5 10 25 50

STAR CHALLENGE 9

Prime numbers

9–10 correct 2 stars
7–8 correct 1 star

The pupils have been asked to find 10 prime numbers.

Prime numbers: 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97