

Master 10.23

Extra Practice 1

Lesson 1: Repeating Patterns

1. Use Pattern Blocks.
 - a) Create a repeating pattern with 5 Pattern Blocks in the core. Sketch two repeats of the core.
 - b) What will the 12th block be?

2. Here is the core of a pattern:



- a) Predict the 18th coin in this pattern.
- b) How many coins do you need in the pattern for a total of \$1.18? Show your work.

Lesson 2: Patterns in Multiplication

1. Multiply. What pattern do you see?

a) 3×101	b) 4×101	c) 5×101
d) 6×101	e) 7×101	f) 8×101

2. Suppose you multiply a number by 5. What will the ones digit of the product be when the number is:
 - a) any odd number?
 - b) any even number?

3. Complete this multiplication chart. Use patterns to help you.

×				
	96	112		144
	102		136	
		126		162
		133	152	
			160	

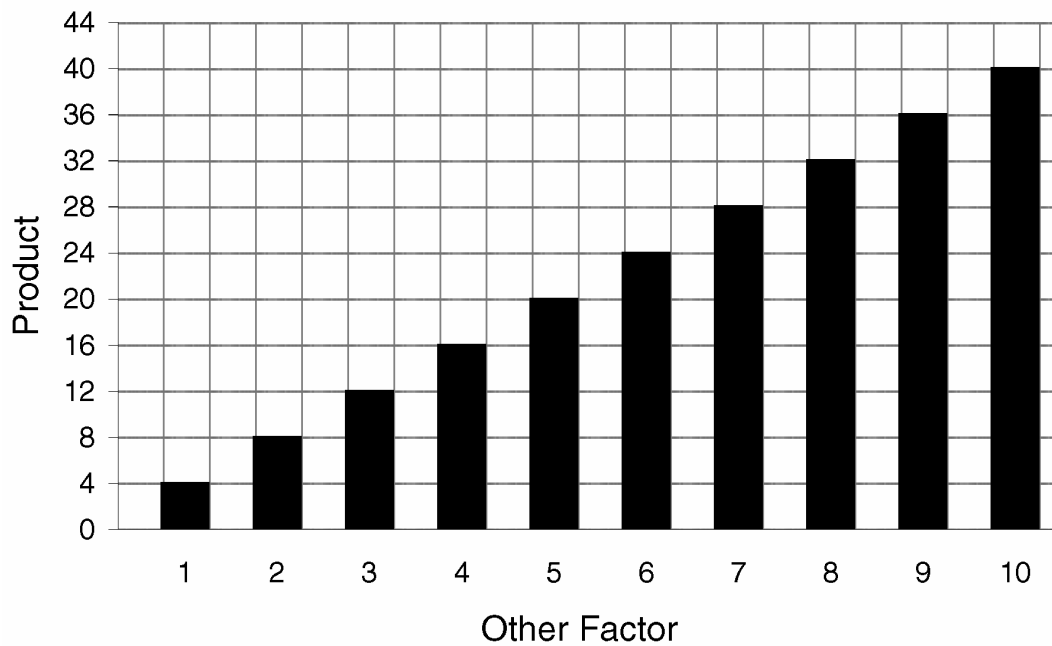
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Extra Practice 1A

Lesson 2A: Graphing Multiplication Facts

1. Draw a bar graph for products with:
 - a) 6 as a factor
 - b) 9 as a factor
2. This is a bar graph for products with a certain factor. What is the factor? How can you tell?

Products with a Certain Factor



Extra Practice 2**Lesson 3: Multiplying a 3-Digit Number by a 1-Digit Number**

1. Multiply.

a) 3×234

b) 132×8

c) 197

$\times \underline{7}$

2. A case of canned vegetables has 2 layers.

Each layer has 16 rows. Each row has 8 cans.

a) How many cans are in the case?

b) How many cans are in 6 cases?

3. Multiply.

a) 5×300

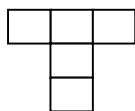
b) 5×299

c) 5×301

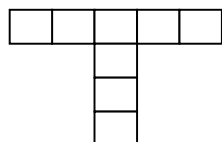
How can you use the answer to part a to find the answers to parts b and c mentally?

Lesson 4: Growing Patterns

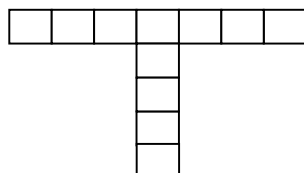
1. Use Colour Tiles or grid paper. Build this growing pattern.



Frame 1



Frame 2



Frame 3

Frame	Squares Added	Squares in a Frame
1	—	5
2	3	
3		
4		
5		

a) Build and record Frames 4 and 5.

b) Complete the table.

c) What is the pattern rule for the numbers of squares in a frame?

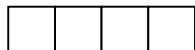
d) How many squares will be in Frame 9?

Extra Practice 3**Lesson 5: Changing-Step Growing Patterns**

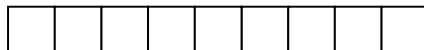
1. Use congruent squares or grid paper to build this growing pattern.



Frame 1



Frame 2



Frame 3

Frame	Squares Added	Squares in a Frame
1	—	1
2	3	4
3		
4		
5		

- Build and record Frames 4 and 5.
- Complete the table.
- What kind of growing pattern is this? How do you know?
- How many squares will be in Frame 10?

Lesson 7: Patterns in Division with Remainders

- Divide. What patterns do you see?

a) $78 \div 6$	b) $77 \div 6$	c) $76 \div 6$
d) $75 \div 6$	e) $74 \div 6$	f) $73 \div 6$
g) $72 \div 6$	h) $71 \div 6$	i) $70 \div 6$
- Kayla says the answer to $86 \div 4$ is 20 R6.
Is Kayla correct? Explain.
- There are 27 students in Mr. Hanna's class.
He wants to arrange the desks in groups of 5.
How many groups will there be? Explain.

Extra Practice 4**Lesson 8: Dividing a 3-Digit Number by a 1-Digit Number**

1. Divide.

a) $286 \div 2$

b) $373 \div 4$

c) $815 \div 5$

d) $9 \overline{)738}$

e) $7 \overline{)815}$

f) $6 \overline{)932}$

2. Sydney is making packages of 6 pencil crayons.

She has 710 pencil crayons.

How many packages of pencil crayons can Sydney make?

Explain.

3. There are 52 cards in a standard deck of cards.

a) How many cards are in 9 standard decks of cards?

b) There are 4 suits in a deck of cards.

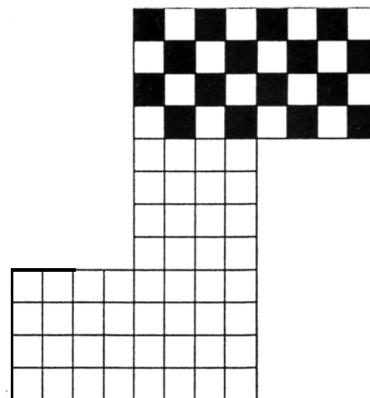
How many cards of each suit are in 9 decks?

Lesson 9: Area Patterns

1. Jimmy is tiling his kitchen floor.

He is using black and white square tiles.

Complete the pattern.

How many tiles of each colour
does Jimmy need to finish the floor?

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Sample Answers

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Lesson 1

- Students should make a pattern with 5 blocks in the core. They should show 2 repeats of the core. For example, triangle, triangle, hexagon, square, square, triangle, triangle, hexagon, square, square
 - For the pattern in part a, the 12th block will be a triangle.
- Penny
 - 16

Lesson 2

- 303
 - 404
 - 505
 - 606
 - 707
 - 808

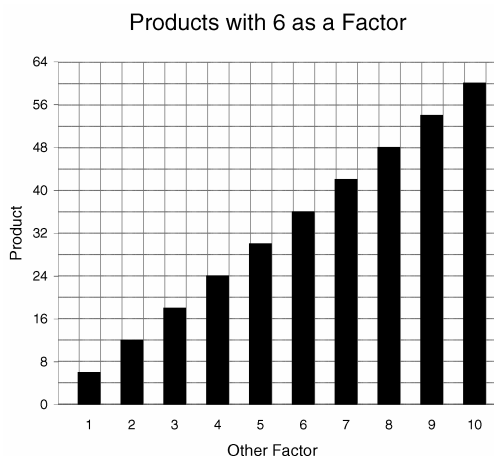
The hundreds digits and the ones digits in the products are the same as the number multiplied by 101.
- 5
 - 0

×	6	7	8	9
1	6	7	8	9
6	96	11	12	14
7	2	2	8	4
1	10	11	13	15
7	2	9	6	3
1	10	12	14	16
8	8	6	4	2
1	11	13	15	17
9	4	3	2	1
2	12	14	16	18
0	0	0	0	0

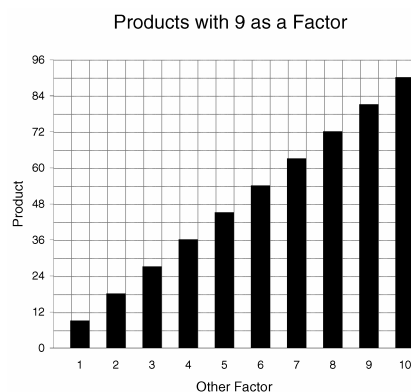
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Lesson 2A

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- 4; the products are multiples of 4.

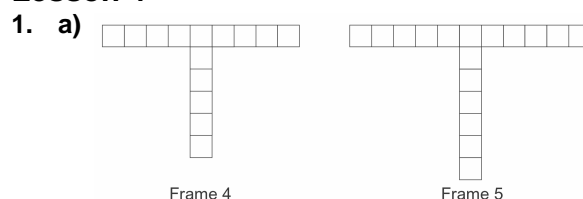
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Lesson 3

- 702
 - 1056
 - 1379
- 256
 - 1536
- 1500
 - 1495
 - 1505

The product of 5×299 is 5 less than the product of 5×300 . The product of 5×301 is 5 more than the product of 5×300 .

Lesson 4



Frame	Squares Added	Squares in a Frame
1	–	5
2	3	8
3	3	11
4	3	14
5	3	17

- The number of squares in a frame starts at 5 and increases by 3 each time.
 - 29

Name _____ Date _____

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Lesson 5

1. a) Frame 4 should have 16 congruent squares arranged in a line. Frame 5 should have 25 congruent squares.

b)

Frame	Squares Added	Squares in a Frame
1	–	1
2	3	4
3	5	9
4	7	16
5	9	25

- c) This is a changing-step growing pattern. The number of squares added starts at 3 and increases by 2 each time.
- d) 100

Lesson 7

1. There is a pattern in the remainders. As the number that is divided by 6 decreases by 1 each time, the remainders form a repeating pattern with core 0, 5, 4, 3, 2, 1.
- a) 13 b) 12 R5 c) 12 R4
d) 12 R3 e) 12 R2 f) 12 R1
g) 12 h) 11 R5 i) 11 R4
2. No; the remainder, 6, is divisible by 4. The answer is 21 R2.
3. 6; there will be 5 groups of 5 and 1 group of 2.

Extra Practice 4 – Master 10.27

Lesson 8

1. a) 143 b) 93 R1 c) 163
d) 82 e) 116 R3 f) 155 R2
2. 118; there will be 2 crayons leftover.
3. a) 468 b) 117

Lesson 9

1. 40 black; 40 white