

Problems and Patterns

Unit Test, Form A (page 1 of 2)

Score _____ / 10

1. Write an equation with a letter for the unknown. Solve.

A shop has **3** boxes of **48** markers. It sells **65** markers. How many markers are left?

48	48	48
65	m	

Equation _____
_____ markers

2. Solve. Show your work.

A school buys **6** boxes of **125** pencils. It gives **280** to the art room and shares the rest equally among **5** classes. How many pencils does each class get?

_____ pencils

3. Estimate to check. Is the answer reasonable?

A school has **31** classes of **22** students. **118** students go on a trip. Kim says **564** students stay at school.

Estimate _____

Reasonable? Yes No

4. Start at **35**. The rule is add **12**. Write the next four numbers. Then circle what is true.

35, _____, _____, _____, _____

All of them are odd.

All of them are even.

Odd and even take turns.

Problems and Patterns

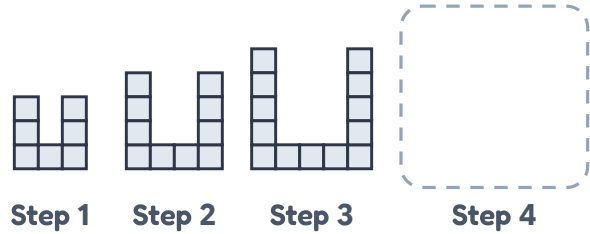
Unit Test, Form A (page 2 of 2)

5. Fill in the missing numbers. Write the rule.

115, 160, _____, 250, _____, 340

Rule: _____

6. Each step adds 3 squares. Draw step 4. How many squares are in step 4 and in step 10?



Step 4: _____ Step 10: _____

7. Write = or $\neq$ in each circle.

6×40 $300 - 60$

$72 \div 8$ $3 + 8$

$125 + 75$ 8×25

$400 - 30$ 7×50

8. Find the value of each letter.

$n + 48 = 125$ $n =$ _____

$7 \times k = 280$ $k =$ _____

$540 \div t = 9$ $t =$ _____

$210 = p - 65$ $p =$ _____

9. Find the rule. Fill in the table.

In	3	5	8	10	
Out	36	60			84

Rule: _____

10. Write an expression for the value at position n. Then find the value at position 12.

Position	1	2	3	4	n
Value	25	50	75	100	?

Value at n: _____

Position 12: _____

Problems and Patterns

Unit Test, Form B (page 1 of 2)

Score _____ / 10

- 1. Write an equation with a letter for the unknown. Solve.**

A farmer packs **4** crates of **36** melons. She sells **58** melons. How many melons are left?

36	36	36	36
58	m		

Equation _____
_____ melons

- 2. Solve. Show your work.**

A farm picks **8** baskets of **115** apples. It keeps **120** apples and packs the rest equally into **4** crates. How many apples go in each crate?

_____ apples

- 3. Estimate to check. Is the answer reasonable?**

A store has **42** boxes of **18** cans. It sells **215** cans. Raj says the store has **971** cans left.

Estimate _____

Reasonable? Yes No

- 4. Start at 46. The rule is add 14. Write the next four numbers. Then circle what is true.**

46, _____, _____, _____, _____

All of them are odd.

All of them are even.

Odd and even take turns.

Problems and Patterns

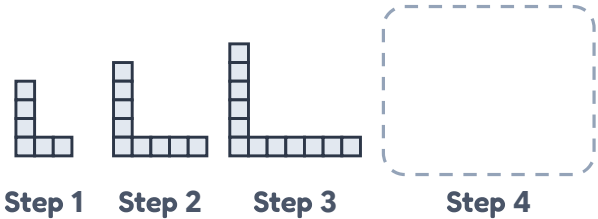
Unit Test, Form B (page 2 of 2)

5. Fill in the missing numbers. Write the rule.

180, 215, _____, 285, _____, 355

Rule: _____

6. Each step adds 3 squares. Draw step 4. How many squares are in step 4 and in step 10?



Step 1

Step 2

Step 3

Step 4

Step 4: _____

Step 10: _____

7. Write = or $\neq$ in each circle.

$56 \div 7$ $4 + 5$

5×60 $350 - 50$

$900 - 300$ 4×125

$36 + 44$ $640 \div 8$

8. Find the value of each letter.

$m + 67 = 152$ $m =$ _____

$6 \times c = 420$ $c =$ _____

$360 \div d = 8$ $d =$ _____

$185 = s - 49$ $s =$ _____

9. Find the rule. Fill in the table.

In	4	6	9	12	
Out	44	66			77

Rule: _____

10. Write an expression for the value at position n . Then find the value at position 12.

Position	1	2	3	4	n
Value	15	30	45	60	?

Value at n : _____

Position 12: _____

Problems and Patterns

Unit Test, Form A (page 1 of 2)

Score _____ / 10

1. Write an equation with a letter for the unknown. Solve.

A shop has **3** boxes of **48** markers. It sells **65** markers. How many markers are left?

48	48	48
65	m	

Equation $3 \times 48 - 65 = m$
 One way 79 markers

Lesson 6.1 · Two-step stories with a letter

2. Solve. Show your work.

A school buys **6** boxes of **125** pencils. It gives **280** to the art room and shares the rest equally among **5** classes. How many pencils does each class get?

$$\begin{aligned} 6 \times 125 &= 750 \\ 750 - 280 &= 470 \\ 470 \div 5 &= 94 \end{aligned}$$

One way

94 pencils

Lesson 6.2 · Multi-step stories; estimate to check

3. Estimate to check. Is the answer reasonable?

A school has **31** classes of **22** students. **118** students go on a trip. Kim says **564** students stay at school.

Estimate $30 \times 20 - 100 = 500$
 One way

Reasonable? Yes No

Lesson 6.2 · Multi-step stories; estimate to check

4. Start at **35**. The rule is add **12**. Write the next four numbers. Then circle what is true.

35, 47, 59, 71, 83

All of them are odd.

All of them are even.

Odd and even take turns.

Lesson 6.5 · Number patterns from a rule

Problems and Patterns

Unit Test, Form A (page 2 of 2)

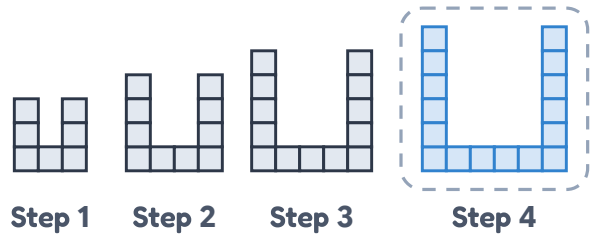
5. Fill in the missing numbers. Write the rule.

115, 160, 205, 250, 295, 340

Rule: Add 45

Lesson 6.5 · Number patterns from a rule

6. Each step adds 3 squares. Draw step 4. How many squares are in step 4 and in step 10?



Step 1 Step 2 Step 3 Step 4

Step 4: 16 Step 10: 34

Lesson 6.6 · Shape patterns from a rule

7. Write = or $\neq$ in each circle.

$$6 \times 40 \quad \text{=} \quad 300 - 60$$

$$72 \div 8 \quad \text{\text{neq}} \quad 3 + 8$$

$$125 + 75 \quad \text{=} \quad 8 \times 25$$

$$400 - 30 \quad \text{\text{neq}} \quad 7 \times 50$$

Lesson 6.3 · True or false with = and $\neq$

8. Find the value of each letter.

$$n + 48 = 125 \quad n = \underline{77}$$

$$7 \times k = 280 \quad k = \underline{40}$$

$$540 \div t = 9 \quad t = \underline{60}$$

$$210 = p - 65 \quad p = \underline{275}$$

Lesson 6.4 · A letter in any place

9. Find the rule. Fill in the table.

In	3	5	8	10	<u>7</u>
Out	36	60	<u>96</u>	<u>120</u>	84

Rule: Multiply by 12

Lesson 6.7 · Input-output tables

10. Write an expression for the value at position n. Then find the value at position 12.

Position	1	2	3	4	n
Value	25	50	75	100	?

Value at n: $25 \times n$
One way

Position 12: 300

Lesson 6.8 · Rules by position

Problems and Patterns

Unit Test, Form B (page 1 of 2)

Score _____ / 10

1. Write an equation with a letter for the unknown. Solve.

A farmer packs **4** crates of **36** melons. She sells **58** melons. How many melons are left?

36	36	36	36
58	m		

Equation $4 \times 36 - 58 = m$
One way

86 melons

Lesson 6.1 · Two-step stories with a letter

2. Solve. Show your work.

A farm picks **8** baskets of **115** apples. It keeps **120** apples and packs the rest equally into **4** crates. How many apples go in each crate?

$$\begin{aligned} 8 \times 115 &= 920 \\ 920 - 120 &= 800 \\ 800 \div 4 &= 200 \end{aligned}$$

One way

200 apples

Lesson 6.2 · Multi-step stories; estimate to check

3. Estimate to check. Is the answer reasonable?

A store has **42** boxes of **18** cans. It sells **215** cans. Raj says the store has **971** cans left.

Estimate $40 \times 20 - 200 = 600$
One way

Reasonable? Yes ☐ No ☒

Lesson 6.2 · Multi-step stories; estimate to check

4. Start at **46**. The rule is add **14**. Write the next four numbers. Then circle what is true.

46, 60, 74, 88, 102

All of them are odd.

All of them are even.

Odd and even take turns.

Lesson 6.5 · Number patterns from a rule

Problems and Patterns

Unit Test, Form B (page 2 of 2)

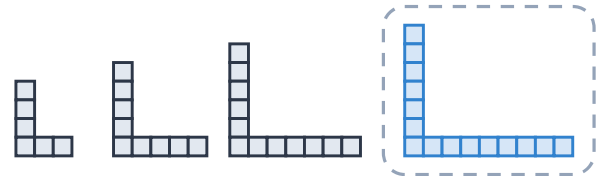
5. Fill in the missing numbers. Write the rule.

180, 215, 250, 285, 320, 355

Rule: Add 35

Lesson 6.5 · Number patterns from a rule

6. Each step adds 3 squares. Draw step 4. How many squares are in step 4 and in step 10?



Step 1 Step 2 Step 3 Step 4

Step 4: 15 Step 10: 33

Lesson 6.6 · Shape patterns from a rule

7. Write = or $\neq$ in each circle.

$56 \div 7$ $\neq$ $4 + 5$

5×60 $=$ $350 - 50$

$900 - 300$ $\neq$ 4×125

$36 + 44$ $=$ $640 \div 8$

Lesson 6.3 · True or false with = and $\neq$

8. Find the value of each letter.

$m + 67 = 152$ $m =$ 85

$6 \times c = 420$ $c =$ 70

$360 \div d = 8$ $d =$ 45

$185 = s - 49$ $s =$ 234

Lesson 6.4 · A letter in any place

9. Find the rule. Fill in the table.

In	4	6	9	12	<u>7</u>
Out	44	66	<u>99</u>	<u>132</u>	<u>77</u>

Rule: Multiply by 11

Lesson 6.7 · Input-output tables

10. Write an expression for the value at position n. Then find the value at position 12.

Position	1	2	3	4	n
Value	15	30	45	60	?

Value at n: $15 \times n$
One way

Position 12: 180

Lesson 6.8 · Rules by position