

MATHS WIZARD

Number Patterns & Algebra



Book 2

TEACH
YOUR
CHILDREN
WELL

Paul Mason

Karen Mason



TEACH YOUR CHILDREN WELL

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Sample Booklet

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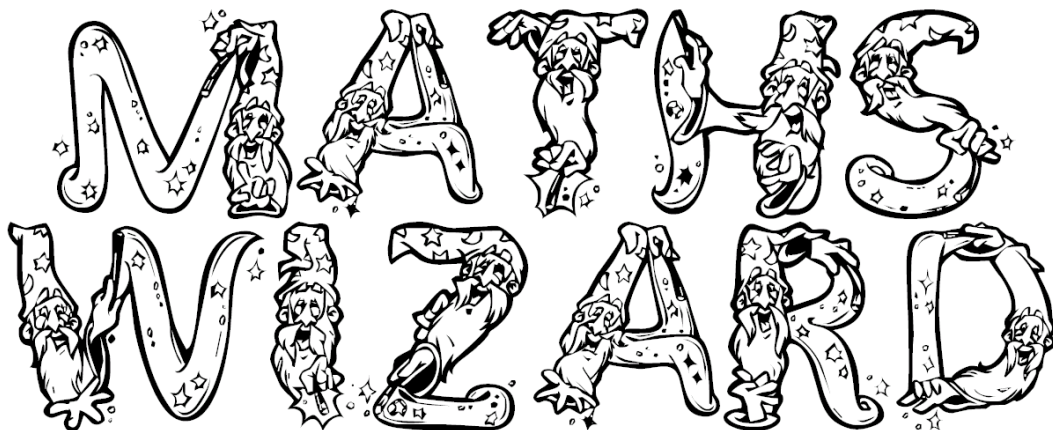
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This booklet is part of the



Series

Patterns and Algebra - 2

Maths Wizard

Pre-test 6 and Post-test 6 Pre-test 7 and Post-test 7 Pre-test 8 and Post-test 8 Pre-test 9 and Post-test 9 Pre-test 10 and Post-test 10	Number patterns - 1-99 $x + n = y$, $x - n = y$. Written algebra problems Simple algebra equations More challenging word problem
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Patterns and Algebra 26 - 30	Number patterns with numbers 1 - 99. Rules vary Eg. +1, +3, +5, or -2, -1, -3, -1
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Patterns and Algebra 31 - 35	$X + N = Y$ or $X - N = Y$ Using numbers 2 - 100.
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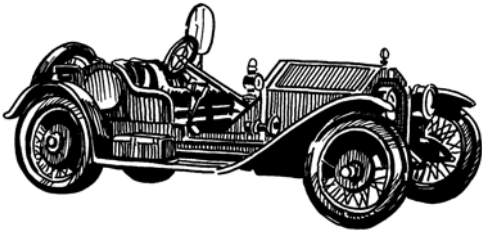
Patterns and Algebra 36 - 40	Written algebra problems. $n + x = y$, $n - x = y$ $x + n = y$, $x - n = y$ Using numbers 2 - 100.
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Patterns and Algebra 41 - 45	Algebra Equations
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Patterns and Algebra 45 - 50	Fractions of numbers in word problems. Numbers 2 - 20.
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Outcomes

- Sequencing numbers and completing patterns
- Solving simple algebraic problems with a missing number
- Solving word problems using simple algebraic skills
- Completes simple number sentences by calculating missing values
- Number sentences involving four operations
- Using inverse operations to solve problems



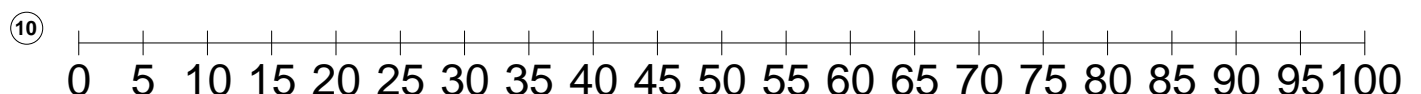
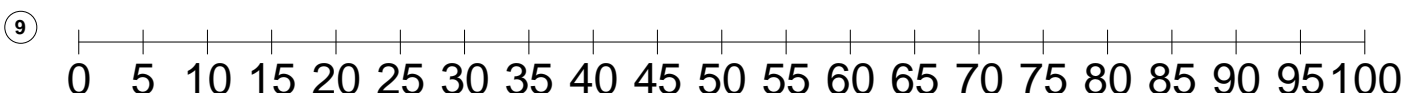
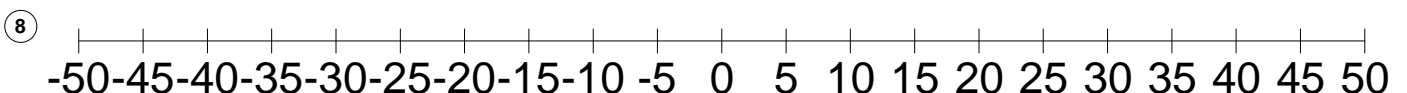
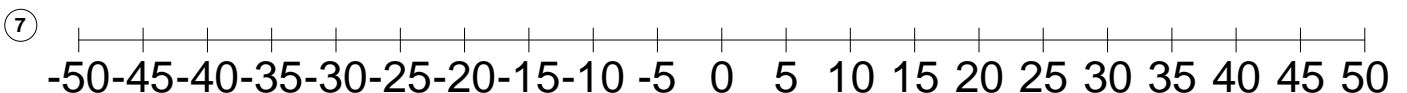
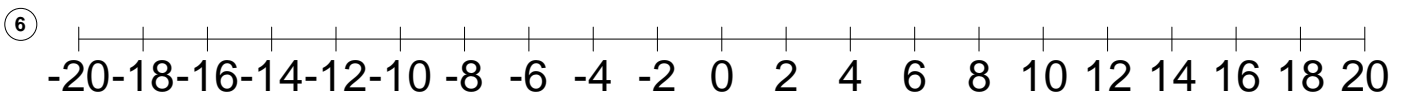
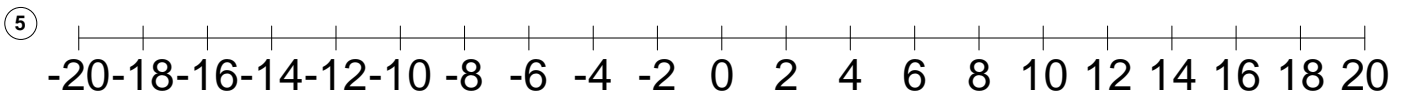
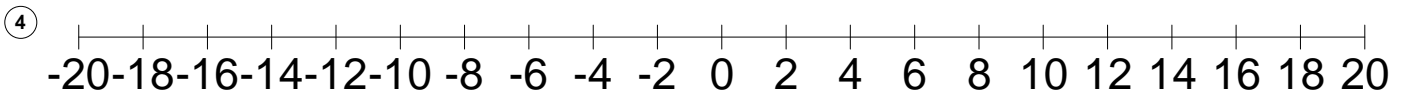
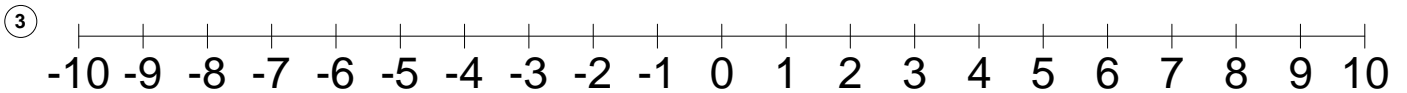
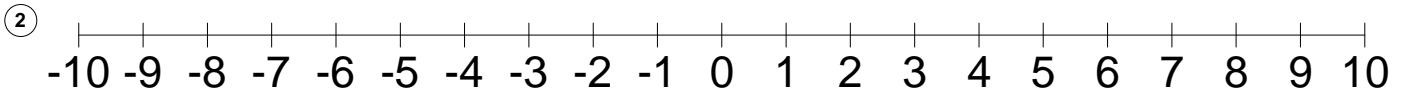
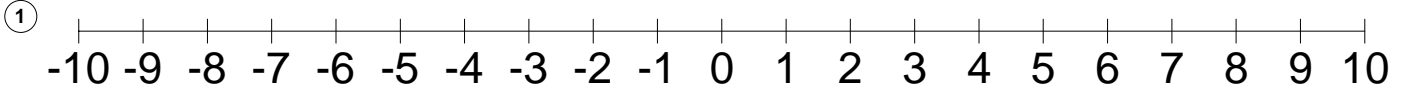
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Date: _____

Number Lines

Tongue Twister: How much wood could a woodchuck chuck, if a woodchuck could chuck wood? It would chuck as much as a woodchuck could, if a woodchuck could chuck wood.

Use these to help you solve some of the problems.





Name: _____

Date: _____

Patterns and Algebra Pre-test 6

What do you get when you cross a duck and a cow? Quackers and milk!

Easy Number Patterns involve adding or subtracting from 1-9.
Harder patterns have rules that vary. eg. (+1, +3, +5) or (x2, -1)

- ① 52, 45, 46, 38, 39, 30, 31, ___ , ___
- ② 5, 13, 21, 29, 37, 45, 53, ___ , ___
- ③ 14, 17, 21, 26, 32, 39, 47, ___ , ___
- ④ 11, 14, 16, 20, 22, 27, 29, ___ , ___
- ⑤ 1, 2, 5, 10, 13, 26, 29, ___ , ___
- ⑥ 52, 48, 44, 40, 36, 32, 28, ___ , ___
- ⑦ 92, 85, 78, 71, 64, 57, 50, ___ , ___
- ⑧ 16, 20, 18, 23, 21, 27, 25, ___ , ___
- ⑨ 39, 49, 58, 66, 73, 79, 84, ___ , ___
- ⑩ 83, 81, 79, 77, 75, 73, 71, ___ , ___
- ⑪ 47, 54, 60, 65, 69, 72, 74, ___ , ___
- ⑫ 15, 23, 31, 39, 47, 55, 63, ___ , ___
- ⑬ 5, 10, 7, 14, 11, 22, 19, ___ , ___
- ⑭ 3, 9, 16, 24, 33, 43, 54, ___ , ___
- ⑮ 89, 82, 75, 68, 61, 54, 47, ___ , ___
- ⑯ 68, 66, 64, 61, 59, 55, 53, ___ , ___
- ⑰ 28, 32, 36, 40, 44, 48, 52, ___ , ___
- ⑱ 3, 10, 17, 24, 31, 38, 45, ___ , ___
- ⑲ 96, 95, 92, 87, 80, 71, 60, ___ , ___
- ⑳ 1, 2, 4, 8, 10, 20, 22, ___ , ___



Name: _____

Date: _____

Patterns and Algebra Pre-test 7

What happens if you throw a yellow rock into the Red Sea? It gets wet.

$x + n = y$ or $x - n = y$

① $y - 17 = -11$ _____

⑪ $x - 11 = 6$ _____

② $y + 7 = 25$ _____

⑫ $x - 6 = 6$ _____

③ $x + 6 = 16$ _____

⑬ $x - 8 = 9$ _____

④ $x - 12 = 1$ _____

⑭ $y - 7 = 2$ _____

⑤ $y - 5 = 3$ _____

⑮ $y - 16 = -8$ _____

⑥ $y - 17 = -12$ _____

⑯ $z + 10 = 27$ _____

⑦ $x - 15 = -3$ _____

⑰ $z + 12 = 19$ _____

⑧ $x - 11 = -5$ _____

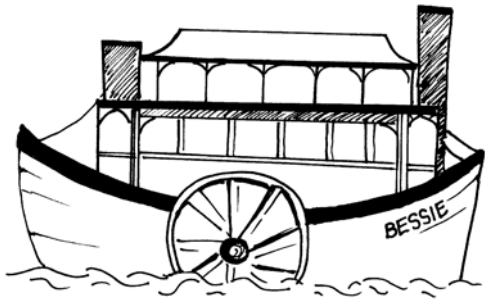
⑱ $y - 12 = 2$ _____

⑨ $y + 14 = 24$ _____

⑲ $x - 9 = -2$ _____

⑩ $z - 5 = 2$ _____

⑳ $y - 18 = -1$ _____



Name: _____

Date: _____

Patterns and Algebra Pre-test 8

What kind of music do cows like? Country Moooo-sic!!

$$x + n = y \text{ or } x - n = y$$

- ① _____ Twelve less than a number is 15. Find the number.
- ② _____ Fifteen more than a number is 31. What is the number?
- ③ _____ A number diminished by 14 is 9. Find the number.
- ④ _____ A number increased by 16 is 30. Find the number.
- ⑤ _____ Seven less than a number is 18. Find the number.
- ⑥ _____ Six more than a number is 22. What is the number?
- ⑦ _____ A number diminished by 6 is 9. Find the number.
- ⑧ _____ A number increased by 15 is 22. Find the number.
- ⑨ _____ Sixteen less than a number is 14. Find the number.
- ⑩ _____ Six more than a number is 23. What is the number?
- ⑪ _____ A number diminished by 18 is 8. Find the number.
- ⑫ _____ A number increased by 17 is 33. Find the number.
- ⑬ _____ Eleven less than a number is 13. Find the number.
- ⑭ _____ Eleven more than a number is 19. What is the number?
- ⑮ _____ A number diminished by 5 is 18. Find the number.
- ⑯ _____ A number increased by 16 is 27. Find the number.
- ⑰ _____ Nineteen less than a number is 5. Find the number.
- ⑱ _____ Eight more than a number is 24. What is the number?
- ⑳ _____ A number decreased by 19 is 11. Find the number.
- _____ A number increased by 10 is 15. Find the number.



Name: _____

Date: _____

Patterns and Algebra Pre-test 9

How do you make an elephant float? Ginger ale, ice cream, and one elephant!

$x + n = y$ or $x - n = y$ AND $5z + 6 = 21$ etc.

① $z + 13 = 24$ _____

⑪ $9x - 17 = 28$ _____

② $x + 12 = 19$ _____

⑫ $16y - 18 = 286$ _____

③ $19 + x = 37$ _____

⑬ $z + 9 = 27$ _____

④ $x - 12 = 2$ _____

⑭ $5 + z = 21$ _____

⑤ $5z - 14 = 46$ _____

⑮ $16x + 19 = 131$ _____

⑥ $7 + y = 19$ _____

⑯ $19 - z = 13$ _____

⑦ $x - 11 = 3$ _____

⑰ $9 - z = 1$ _____

⑧ $x + 6 = 14$ _____

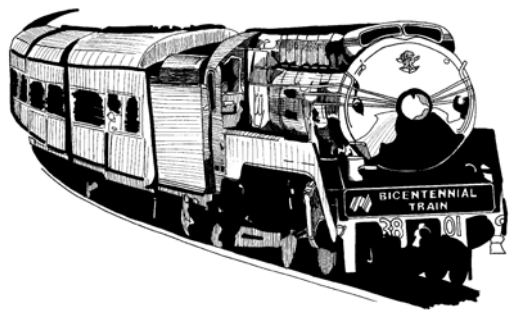
⑱ $z - 7 = 9$ _____

⑨ $12y + 17 = 137$ _____

⑲ $12 - x = -3$ _____

⑩ $13 - x = -3$ _____

⑳ $6x - 8 = 52$ _____



Name: _____

Date: _____

Patterns and Algebra Pre-test 10

Why did the cookie go to the doctor? Because he felt crummy.

A fraction of a number = y . $f \times n + x = y$. $f \times n - x = y$.

- ① _____ Two-fifths of a number increased by 5 is 19. What is the number?
- ② _____ Two-thirds of a number decreased by 7 is 13. Find the number.
- ③ _____ Three-fourths of a number is 6. Find the number.
- ④ _____ Two-fifths of a number increased by 1 is 5. What is the number?
- ⑤ _____ One-half of a number diminished by 4 is 0. Find the number.
- ⑥ _____ One-half of a number is 3. Find the number.
- ⑦ _____ Three-fourths of a number increased by 7 is 19. What is the number?
- ⑧ _____ One-fourth of a number decreased by 3 is 4. Find the number.
- ⑨ _____ One-third of a number is 2. Find the number.
- ⑩ _____ One-fourth of a number increased by 7 is 16. What is the number?
- ⑪ _____ Two-thirds of a number decreased by 4 is 16. Find the number.
- ⑫ _____ Three-fifths of a number is 6. Find the number.
- ⑬ _____ Four-fifths of a number increased by 14 is 42. What is the number?
- ⑭ _____ One-third of a number decreased by 6 is -2. Find the number.
- ⑮ _____ One-fourth of a number is 2. Find the number.
- ⑯ _____ One-third of a number increased by 1 is 7. What is the number?
- ⑰ _____ Three-fourths of a number decreased by 2 is 7. Find the number.
- ⑱ _____ Two-fourths of a number is 8. Find the number.
- ⑲ _____ One-half of a number increased by 2 is 14. What is the number?
- ⑳ _____ One-half of a number diminished by 9 is 8. Find the number.



Name: _____ Date: _____

Patterns and Algebra Pre-test 6

What do you get when you cross a duck and a cow? Quackers and milk!

Easy Number Patterns involve adding or subtracting from 1-9. Harder patterns have rules that vary. eg. (+1, +3, +5) or (x2, -1)

- ① 52, 45, 46, 38, 39, 30, 31, **21, 22** (-7 + 1 - 8 + 1 - 9 + 1...)
- ② 5, 13, 21, 29, 37, 45, 53, **61, 69** (+8)
- ③ 14, 17, 21, 26, 32, 39, 47, **56, 66** (+3 + 4 + 5 + 6...)
- ④ 11, 14, 16, 20, 22, 27, 29, **35, 37** (+3 + 2 + 4 + 2 + 5 + 2...)
- ⑤ 1, 2, 5, 10, 13, 26, 29, **58, 61** (x2 + 3 x 2 + 3 x 2 + 3...)
- ⑥ 52, 48, 44, 40, 36, 32, 28, **24, 20** (-4)
- ⑦ 92, 85, 78, 71, 64, 57, 50, **43, 36** (-7)
- ⑧ 16, 20, 18, 23, 21, 27, 25, **32, 30** (+4 - 2 + 5 - 2 + 6 - 2...)
- ⑨ 39, 49, 58, 66, 73, 79, 84, **88, 91** (+10 + 9 + 8 + 7...)
- ⑩ 83, 81, 79, 77, 75, 73, 71, **69, 67** (-2)
- ⑪ 47, 54, 60, 65, 69, 72, 74, **75, 75** (+7 + 6 + 5 + 4...)
- ⑫ 15, 23, 31, 39, 47, 55, 63, **71, 79** (+8)
- ⑬ 5, 10, 7, 14, 11, 22, 19, **38, 35** (x2 - 3 x 2 - 3 x 2 - 3...)
- ⑭ 3, 9, 16, 24, 33, 43, 54, **66, 79** (+6 + 7 + 8 + 9...)
- ⑮ 89, 82, 75, 68, 61, 54, 47, **40, 33** (-7)
- ⑯ 68, 66, 64, 61, 59, 55, 53, **48, 46** (-2 - 2 - 3 - 2 - 4 - 2...)
- ⑰ 28, 32, 36, 40, 44, 48, 52, **56, 60** (+4)
- ⑱ 3, 10, 17, 24, 31, 38, 45, **52, 59** (+7)
- ⑲ 96, 95, 92, 87, 80, 71, 60, **47, 32** (-1 - 3 - 5 - 7 - 9...)
- ⑳ 1, 2, 4, 8, 10, 20, 22, **44, 46** (x2 + 2 x 2 + 2 x 2 + 2...)



Name: _____ Date: _____

Patterns and Algebra Pre-test 7

What happens if you throw a yellow rock into the Red Sea? It gets wet.

x + n = y or x - n = y

- ① y - 17 = -11 **y = 6** ⑪ x - 11 = 6 **x = 17**
- ② y + 7 = 25 **y = 18** ⑫ x - 6 = 6 **x = 12**
- ③ x + 6 = 16 **x = 10** ⑬ x - 8 = 9 **x = 17**
- ④ x - 12 = 1 **x = 13** ⑭ y - 7 = 2 **y = 9**
- ⑤ y - 5 = 3 **y = 8** ⑮ y - 16 = -8 **y = 8**
- ⑥ y - 17 = -12 **y = 5** ⑯ z + 10 = 27 **z = 17**
- ⑦ x - 15 = -3 **x = 12** ⑰ z + 12 = 19 **z = 7**
- ⑧ x - 11 = -5 **x = 6** ⑱ y - 12 = 2 **y = 14**
- ⑨ y + 14 = 24 **y = 10** ⑲ x - 9 = -2 **x = 7**
- ⑩ z - 5 = 2 **z = 7** ⑳ y - 18 = -1 **y = 17**



Name: _____ Date: _____

Patterns and Algebra Pre-test 8

What kind of music do cows like? Country Moo-oo-sie!

x + n = y or x - n = y

- ① **27** Twelve less than a number is 15. Find the number.
- ② **16** Fifteen more than a number is 31. What is the number?
- ③ **23** A number diminished by 14 is 9. Find the number.
- ④ **14** A number increased by 16 is 30. Find the number.
- ⑤ **25** Seven less than a number is 18. Find the number.
- ⑥ **16** Six more than a number is 22. What is the number?
- ⑦ **15** A number diminished by 6 is 9. Find the number.
- ⑧ **7** A number increased by 15 is 22. Find the number.
- ⑨ **30** Sixteen less than a number is 14. Find the number.
- ⑩ **17** Six more than a number is 23. What is the number?
- ⑪ **26** A number diminished by 18 is 8. Find the number.
- ⑫ **16** A number increased by 17 is 33. Find the number.
- ⑬ **24** Eleven less than a number is 13. Find the number.
- ⑭ **8** Eleven more than a number is 19. What is the number?
- ⑮ **23** A number diminished by 5 is 18. Find the number.
- ⑯ **11** A number increased by 16 is 27. Find the number.
- ⑰ **24** Nineteen less than a number is 5. Find the number.
- ⑱ **16** Eight more than a number is 24. What is the number?
- ⑲ **30** A number decreased by 19 is 11. Find the number.
- ⑳ **5** A number increased by 10 is 15. Find the number.



Name: _____ Date: _____

Patterns and Algebra Pre-test 9

How do you make an elephant float? Ginger ale, ice cream, and one elephant!

x + n = y or x - n = y AND 5z + 6 = 21 etc.

- ① z + 13 = 24 **z = 11** ⑪ 9x - 17 = 28 **x = 5**
- ② x + 12 = 19 **x = 7** ⑫ 16y - 18 = 286 **y = 19**
- ③ 19 + x = 37 **x = 18** ⑬ z + 9 = 27 **z = 18**
- ④ x - 12 = 2 **x = 14** ⑭ 5 + z = 21 **z = 16**
- ⑤ 5z - 14 = 46 **z = 12** ⑮ 16x + 19 = 131 **x = 7**
- ⑥ 7 + y = 19 **y = 12** ⑯ 19 - z = 13 **z = 6**
- ⑦ x - 11 = 3 **x = 14** ⑰ 9 - z = 1 **z = 8**
- ⑧ x + 6 = 14 **x = 8** ⑱ z - 7 = 9 **z = 16**
- ⑨ 12y + 17 = 137 **y = 10** ⑲ 12 - x = -3 **x = 15**
- ⑩ 13 - x = -3 **x = 16** ⑳ 6x - 8 = 52 **x = 10**

Name: _____



Scores

	Correct	Time	Correct	Time
Pre-test 6			Post-test 6	
Pre-test 7			Post-test 7	
Pre-test 8			Post-test 8	
Pre-test 9			Post-test 9	
Pre-test 10			Post-test 10	
Worksheet 26			Worksheet 39	
Worksheet 27			Worksheet 40	
Worksheet 28			Worksheet 41	
Worksheet 29			Worksheet 42	
Worksheet 30			Worksheet 43	
Worksheet 31			Worksheet 44	
Worksheet 32			Worksheet 45	
Worksheet 33			Worksheet 46	
Worksheet 34			Worksheet 47	
Worksheet 35			Worksheet 48	
Worksheet 36			Worksheet 49	
Worksheet 37			Worksheet 50	
Worksheet 38				