

Worksheet 1: Introduction to Partitioning

Name:

Date:

Q1. Split 5 in all ways

$$5 = 5 + 0$$

$$5 = _ + _$$

$$5 = _ + _$$

How many ways?

Q2. Split 6 in all ways

$$6 = 6 + 0$$

$$6 = _ + _$$

$$6 = _ + _$$

$$6 = _ + _$$

How many ways?

Q3. Split 7 in all ways

$$7 = 7 + 0$$

$$7 = _ + _$$

$$7 = _ + _$$

$$7 = _ + _$$

How many ways?

Q4. Split 8 in all ways

$$8 = 8 + 0$$

$$8 = 7 + 1$$

$$8 = _ + _$$

$$8 = _ + _$$

How many ways?

Q5. Split 9 in all ways

$$9 = 9 + 0$$

$$9 = 8 + 1$$

$$9 = _ + _$$

$$9 = _ + _$$

$$9 = _ + _$$

How many ways?

Q6. Split 10 in all ways

$$10 = 10 + 0$$

$$10 = 9 + 1$$

$$10 = _ + _$$

$$10 = _ + _$$

$$10 = _ + _$$

How many ways?

Worksheet 2: Even vs Odd Partitions

Name: _____

Date: _____

Q1. Complete partitions for EVEN 12

$$12 = 12 + 0$$

$$12 = 11 + 1$$

$$12 = 10 + 2$$

$$12 = _ + _$$

$$12 = _ + _$$

$$12 = _ + _ \leftarrow \text{STOP! SAME pair!}$$

Stopping pair: $_ + _$

Q2. Complete partitions for ODD 11

$$11 = 11 + 0$$

$$11 = 10 + 1$$

$$11 = _ + _$$

$$11 = _ + _$$

$$11 = _ + _ \leftarrow \text{STOP! ONE MORE!}$$

Stopping pair: $_ + _$

Q3. Complete partitions for EVEN 14

$$14 = 14 + 0$$

$$14 = 13 + 1$$

$$14 = _ + _$$

$$14 = _ + _$$

$$14 = _ + _$$

$$14 = _ + _ \leftarrow \text{STOP! SAME pair!}$$

Stopping pair: $_ + _$

Q4. Complete partitions for ODD 9

$$9 = 9 + 0$$

$$9 = _ + _$$

$$9 = _ + _$$

$$9 = _ + _ \leftarrow \text{STOP! ONE MORE!}$$

Stopping pair: $_ + _$

Q5. Complete partitions for EVEN 8

$$8 = 8 + 0$$

$$8 = 7 + 1$$

$$8 = _ + _$$

$$8 = _ + _ \leftarrow \text{STOP! SAME pair!}$$

Stopping pair: $_ + _$

Worksheet 3: Finding Stopping Pairs

Name: _____

Date: _____

Write the stopping pair for each number.

Q1. Number 8 (EVEN)

Stopping pair: $_ + _$

Q2. Number 15 (ODD)

Stopping pair: $_ + _$

Q3. Number 16 (EVEN)

Stopping pair: $_ + _$

Q4. Number 13 (ODD)

Stopping pair: $_ + _$

Q5. Number 20 (EVEN)

Stopping pair: $_ + _$

Q6. Number 19 (ODD)

Stopping pair: $_ + _$

Q7. Number 10 (EVEN)

Stopping pair: $_ + _$

Q8. Number 9 (ODD)

Stopping pair: $_ + _$

Q9. Number 24 (EVEN)

Stopping pair: $_ + _$

Q10. Number 21 (ODD)

Stopping pair: $_ + _$

Q11. Number 30 (EVEN)

Stopping pair: $_ + _$

Q12. Number 27 (ODD)

Stopping pair: $_ + _$

Q13. Number 50 (EVEN)

Stopping pair: $_ + _$

Q14. Number 33 (ODD)

Stopping pair: $_ + _$

Q15. Challenge: What's the stopping pair for 100?

$_ + _$

Hint: Is it SAME or ONE MORE?

Worksheet 4: Counting All Partitions

Name:

Date:

Q1. How many ways to split 5?

$$5 = 5 + 0$$

$$5 = 4 + 1$$

$$5 = 3 + 2 \leftarrow \text{STOP!}$$

Total ways:

Q2. How many ways to split 12?

$$12 = 12 + 0$$

$$12 = 11 + 1$$

$$12 = 10 + 2$$

$$12 = 9 + 3$$

$$12 = 8 + 4$$

$$12 = 7 + 5$$

$$12 = 6 + 6 \leftarrow \text{STOP!}$$

Total ways:

Q3. How many ways to split 11?

$$11 = 11 + 0$$

$$11 = 10 + 1$$

$$11 = 9 + 2$$

$$11 = 8 + 3$$

$$11 = 7 + 4$$

$$11 = 6 + 5 \leftarrow \text{STOP!}$$

Total ways:

Q4. How many ways to split 9?

$$9 = 9 + 0$$

$$9 = 8 + 1$$

$$9 = 7 + 2$$

$$9 = 6 + 3$$

$$9 = 5 + 4 \leftarrow \text{STOP!}$$

Total ways:

Q5. How many ways to split 20?

Start: $20 + 0$

... Stop: $_ + _$

Total ways:

Worksheet 5: Explaining Completeness

Name: _____

Date: _____

Q1. Complete all partitions for 8

$$8 = 8 + 0$$

$$8 = 7 + 1$$

$$8 = 6 + 2$$

$$8 = 5 + 3$$

$$8 = 4 + 4 \leftarrow \text{STOP!}$$

Why STOP? Because _

Q2. Complete all partitions for 13

$$13 = 13 + 0$$

$$13 = 12 + 1$$

$$13 = 11 + 2$$

$$13 = 10 + 3$$

$$13 = 9 + 4$$

$$13 = 8 + 5$$

$$13 = 7 + 6 \leftarrow \text{STOP!}$$

Why STOP? Because _

Q3. Complete all partitions for 10

$$10 = 10 + 0$$

$$10 = 9 + 1$$

$$10 = 8 + 2$$

$$10 = 7 + 3$$

$$10 = 6 + 4$$

$$10 = 5 + 5 \leftarrow \text{STOP!}$$

Why STOP? Because _

Q4. Complete all partitions for 9

$$9 = 9 + 0$$

$$9 = 8 + 1$$

$$9 = 7 + 2$$

$$9 = 6 + 3$$

$$9 = 5 + 4 \leftarrow \text{STOP!}$$

Why STOP? Because _

Q5. Check off each rule you used

✓ Started at BIGGEST ($n + 0$) _

✓ Decreased by 1 each time _

✓ Stopped at MIDDLE (SAME or ONE MORE) _

✓ Found ALL ways with NO repeats _

Worksheet 6: Challenge & Extension

Name:

Date:

Q1. Complete partitions for 18 (EVEN)

$$18 = 18 + 0$$

↓

↓

$$18 = 9 + 9 \leftarrow \text{STOP!}$$

How many ways total?

$$\text{Pattern: } (18 \div 2) + 1 = \checkmark$$

Q2. Complete partitions for 17 (ODD)

$$17 = 17 + 0$$

↓

↓

$$17 = 9 + 8 \leftarrow \text{STOP!}$$

How many ways total?

$$\text{Pattern: } (17 \div 2) + 1 = \checkmark$$

Q3. Complete partitions for 20 (EVEN)

$$20 = 20 + 0$$

↓

↓

$$20 = 10 + 10 \leftarrow \text{STOP!}$$

How many ways total?

$$\text{Pattern: } (20 \div 2) + 1 = \checkmark$$

Q4. Complete partitions for 21 (ODD)

$$21 = 21 + 0$$

↓

↓

$$21 = 11 + 10 \leftarrow \text{STOP!}$$

How many ways total?

$$\text{Pattern: } (21 \div 2) + 1 = \checkmark$$

Q5. Complete partitions for 14 (EVEN)

$$14 = 14 + 0$$

↓

↓

$$14 = 7 + 7 \leftarrow \text{STOP!}$$

How many ways total?

$$\text{Pattern: } (14 \div 2) + 1 = \checkmark$$