

Part A: Pair Up! Circle ODD or EVEN

Number 5: ODD — one left over

Number 8: EVEN — all paired, none left over

Number 11: ODD — one left over

Number 14: EVEN — all paired, none left over

Number 7: ODD — one left over

Number 16: EVEN — all paired, none left over

Number 9: ODD — one left over

Number 12: EVEN — all paired, none left over

Part B: Decompose to Prove!

$6 = 3 + 3$ (even)

$9 = 4 + 4 + 1$ (odd)

$10 = 5 + 5$ (even)

$13 = 6 + 6 + 1$ (odd)

$18 = 9 + 9$ (even)

$15 = 7 + 7 + 1$ (odd)

Part C: What happens when you add...?

even + even = EVEN ($4 + 6 = 10$, which is even)

odd + odd = EVEN ($3 + 5 = 8$, which is even)

even + odd = ODD ($4 + 3 = 7$, which is odd)

RULE: Two evens or two odds make even; one of each makes odd.

Teaching Notes:

- Use physical objects (counters, blocks) for students who struggle with pairing.
- Help students see that even numbers always end in 0, 2, 4, 6, or 8.
- The decomposition in Part B reinforces that even = two equal groups.

D/I/A/P/E Scoring Guide:

D (Developing): <60% correct, needs significant support | A (Approaching): 60-74%, some understanding

P (Proficient): 75-89%, meets standard consistently | E (Exemplary): 90-100%, exceeds with clear reasoning

Tip: For open-ended questions, focus on reasoning quality rather than exact wording.

Part A: Draw Arrays and Write Repeated Addition

3 rows of 4: $4 + 4 + 4 = 12 \rightarrow 3 \times 4 = 12$

2 rows of 5: $5 + 5 = 10 \rightarrow 2 \times 5 = 10$

4 rows of 3: $3 + 3 + 3 + 3 = 12 \rightarrow 4 \times 3 = 12$

5 rows of 2: $2 + 2 + 2 + 2 + 2 = 10 \rightarrow 5 \times 2 = 10$

Part B: Write Repeated Addition from Arrays

Array 1 (2×6): $6 + 6 = 12$

Array 2 (3×3): $3 + 3 + 3 = 9$

Array 3 (4×5): $5 + 5 + 5 + 5 = 20$

Part C: Word Problems with Arrays

1. Muffin tray: 3 rows $\times$ 4 = 12 muffins; $4 + 4 + 4 = 12$

2. Garden: 5 rows $\times$ 3 = 15 flowers; $3 + 3 + 3 + 3 + 3 = 15$

3. Desks: 4 rows $\times$ 5 = 20 desks; $5 + 5 + 5 + 5 = 20$

Part D: Even/Odd Connection

Arrays with 2 equal rows always have **EVEN** totals

2 rows of 4 = 8 (even), 2 rows of 7 = 14 (even)

Teaching Notes:

- Arrays connect to multiplication concepts students will learn in 3rd grade.
- Emphasize rows vs. columns and that 3×4 and 4×3 give the same total.
- Use graph paper for students who need help drawing neat arrays.

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Part A: Estimate, Then Measure!

Answers will vary based on actual objects. Accept reasonable measurements.

Pencil: approximately ~7 inches / ~18 cm

Book: approximately ~9-11 inches / ~23-28 cm

Hand span: approximately ~6-7 inches / ~15-18 cm

Crayon: approximately ~3.5 inches / ~9 cm

Shoe: approximately ~8-9 inches / ~20-23 cm

Paperclip: approximately ~1 inch / ~3 cm

Part B: Comparing Measurements

1. **Longest:** Likely the book or shoe (answers vary)
2. **Shortest:** Likely the paperclip
3. **Difference:** Subtract shortest from longest
4. **Centimeter numbers are BIGGER** because cm are smaller units

Part C: Choose the Right Tool

Paperclip → inch ruler (small objects)

Desk → yardstick or meter stick

Gym floor → meter stick or measuring tape

Teaching Notes:

- Remind students to start at 0, not the edge of the ruler.
- Estimation skill improves with practice — celebrate close estimates!
- Students should understand WHY cm numbers > inch numbers (smaller unit = more).

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Part A: Same Object, Different Units!

Centimeters is always BIGGER because centimeters are smaller units.

1 inch $\approx$ 2.54 cm, so cm count is roughly 2.5 $\times$ the inch count.

Part B: Measurement Stations

Accept accurate measurements. Key check: cm number > inch number for same object.

Part C: Height Comparison

Answers vary. Look for: correct subtraction to find difference, correct ordering from shortest to tallest.

Part D: Word Problems

1. String: 24 inches, cut 8 inches $\rightarrow$ $24 - 8 = 16$ inches left

2. Two pieces: $15\text{ cm} + 22\text{ cm} = 37\text{ cm}$ total

3. Ribbon: $30\text{ inches} - 12\text{ inches} = 18\text{ inches}$ remaining

Teaching Notes:

- Key concept: using a SMALLER unit gives a LARGER number.
- Common error: students confuse which is bigger (the unit vs the count).
- Use string to physically demonstrate measuring with different units.

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Measurement Word Problem Answers

1. Lizard Lengths

Answer: $14 - 9 = 5$ cm longer

Equation: $14 - 9 = 5$

2. Growing Plants

Answer: $8 + 6 = 14$ inches tall

Equation: $8 + 6 = 14$

3. Ribbon Cutting

Answer: $30 - 12 - 8 = 10$ cm left

Equation: $30 - 12 = 18$, $18 - 8 = 10$

4. Building Towers

Answer: $25 + 13 = 38$ inches; $38 > 32$, so her tower is taller by 6 inches

Equation: $25 + 13 = 38$, $38 - 32 = 6$

Common Errors to Watch For:

- Student adds when should subtract (or vice versa) — reread for keywords
- Forgetting to label units (inches vs cm)
- Problem 3 is two-step — many students only do one subtraction
- Problem 4: Students may forget to compare after adding

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Part A: Addition on a Number Line

$7 + 5 = 12$ — Start at 7, jump 5 forward

$12 + 8 = 20$ — Start at 12, jump 8 forward

$9 + 6 = 15$ — Start at 9, jump 6 forward

Part B: Subtraction on a Number Line

$15 - 6 = 9$ — Start at 15, jump 6 backward

$20 - 8 = 12$ — Start at 20, jump 8 backward

$18 - 9 = 9$ — Start at 18, jump 9 backward

Part C: Mixed Number Line Problems

Caterpillar: starts at 6 cm, moves 9 cm → lands at 15 cm

Frog: starts at 20, jumps back 7 → lands at 13

Part D: Two-Step Problems

Snake: $12 + 5 = 17$, then $17 - 3 = 14$ cm

Worm: $8 + 6 = 14$, then $14 + 4 = 18$ cm

Teaching Notes:

- Students should draw arrows/arcs on the number line to show jumps.
- For subtraction, emphasize jumping BACKWARD (to the left).
- Connect number lines to rulers — both are measurement tools!

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Part A: Quick Check

1. 27 is ODD — it has one left over when paired ($13 + 13 + 1$)
2. Array: 4 rows $\times$ 5 columns; $5 + 5 + 5 + 5 = 20$
3. Pencil is longer by $19 - 15 = 4$ cm
4. 14 inches + 9 inches = 23 inches total
5. Centimeters — because cm are smaller units, you need more of them

Part B: True or False

1. 'All even numbers end in 0, 2, 4, 6, or 8' $\rightarrow$ TRUE
2. '3 rows of 4 = 4 rows of 3' $\rightarrow$ TRUE (both = 12)
3. 'A yardstick is best for measuring a paperclip' $\rightarrow$ FALSE (use ruler)
4. 'Adding two odd numbers gives an odd number' $\rightarrow$ FALSE (gives even)

Part C: Challenge Problems

1. 3 shelves $\times$ 6 books = 18 books; $6 + 6 + 6 = 18$
2. Ribbon: 45 cm - 18 cm - 12 cm = 15 cm left
3. Accept any even number decomposed into two equal addends

Teaching Notes:

- Mixed practice helps identify which skills need reinforcement.
- If a student struggles, refer back to the specific week's worksheet.

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Part A: Vocabulary Match

1. Array → b) Objects arranged in rows and columns
2. Odd number → c) A number with one left over when paired
3. Even number → a) A number that can be split into two equal groups
4. Estimate → f) A smart guess about a measurement
5. Ruler → d) A tool for measuring length
6. Centimeter → e) A small unit of length

Part B: Self-Assessment Guidance

Use student self-ratings alongside assessment scores:

- Identify odd/even numbers → Check Part A accuracy on Page 1
- Use arrays and repeated addition → Check Part A on Page 2
- Measure with appropriate tools → Check estimates vs actuals on Page 3
- Solve measurement word problems → Check Pages 5-6 accuracy

Mastery Indicators:

D: Student correctly answers fewer than 60% of problems; struggles with basic concepts

A: Student answers 60-74% correctly; understands concepts but makes frequent errors

P: Student answers 75-89% correctly; solid understanding with occasional mistakes

E: Student answers 90%+ correctly; can explain reasoning and create own problems

Next Steps:

- Week 21-24 builds on measurement with length word problems and number lines.
- Students who scored D/A should review odd/even and arrays before moving on.
- Consider re-measuring activities for students who struggled with tools.