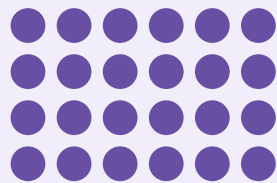
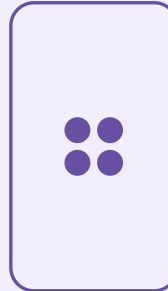
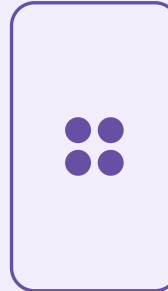
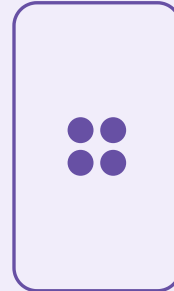


Word Problem Sense-Maker: Understand It Before You Compute

6 complete activities from Word Problem Sense-Maker, each with a worked answer.



4 rows of 6



3 groups of 4

HOW TO USE

1. Read the situation and the evidence first.
2. Show your thinking in the work boxes, not only an answer.
3. Explain how you know your answer makes sense.
4. Try the new problem at the bottom of the page.

6 activities • 3 answer pages • From the 24-activity collection

10 US Letter pages • Print at 100% / Actual Size

Original Bobotemp educational printable • Fictional names, places and prices

Name _____ Date _____

LEVEL 1



Read the story. Sort each number as Need or Don't Need. Then solve and explain.

Grade 4. The school garden club planted tomato plants in 6 rows. Each row has 8 plants. The club has 14 members, and they meet 2 days a week. How many tomato plants did the club plant?

EVIDENCE TO USE

- 6 rows of tomato plants
- 8 plants in each row
- 14 club members
- 2 meeting days each week

1. Retell the story without saying any numbers.

[illegible]

2. Sort each number as Need or Don't Need. For each Don't Need number, name a question it could answer.

A blank sheet of graph paper with a grid pattern. The grid consists of 10 columns and 10 rows of squares. The paper has rounded corners and a light gray border.

3. Draw an array or equal-groups picture, then solve.

A blank sheet of graph paper with a grid pattern. The grid consists of 20 columns and 15 rows of squares. The paper has rounded corners and a light gray border.

TRY IT • The club also planted 4 rows of pepper plants with 9 plants in each row. Then 3 club members watered the garden for 20 minutes. How many pepper plants did the club plant?

Name _____ Date _____

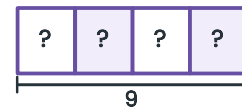
LEVEL 1



Choose the tape diagram that matches the story. Label it, then solve.

Grade 4. Maya built a model bridge that is 9 inches long. Leo built a model bridge that is 4 times as long as Maya's bridge. How long is Leo's bridge? Look at Diagrams A, B and C below.

DIAGRAM C



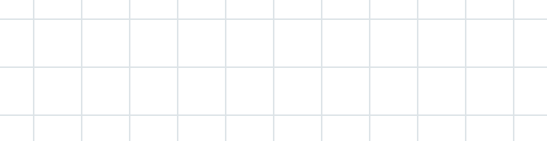
9	9	9	9
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?

1. Which diagram matches the story? Explain using the words 'times as long.'

[illegible]

3. Solve and write the answer with its unit.



TRY IT • Lily's ribbon is 7 feet long. Omar's ribbon is 3 times as long as Lily's. How long is Omar's ribbon? Sketch the diagram first.

Name _____ Date _____

LEVEL 2 ●●○

Sort every number, find the in-between amount, and then solve.

Grade 5. Lena bought 3 notebooks for \$2.45 each and one pen for \$1.30 (sample prices). She paid with a \$10 bill. The store is 1.2 miles from her home, and she went there with 2 friends. How much change should Lena get?

- 3 notebooks
- \$2.45 per notebook
- \$1.30 for one pen
- Paid with \$10.00
- 1.2 miles to the store
- 2 friends went along

1. Sort each number as Need or Don't Need. Explain each Don't Need number.



2. Name the in-between amount you must find before you can find the change.

[illegible]

3. Solve, then check with an estimate.

[illegible]

TRY IT • Lena buys 2 notebooks at \$2.45 each and pays with a \$5 bill. Her friend buys a \$1.30 pen with her own money. How much change does Lena get?

Name _____ Date _____

LEVEL 2



All three questions use the same division. Decide what to do with the remainder for each one.

Grade 5. The craft club has 380 beads. Each bracelet uses exactly 24 beads. Question A: How many complete bracelets can the club make? Question B: How many beads will be left over after making as many bracelets as possible? Question C: The beads are stored in bags that hold 24 beads each. How many bags are needed to store all 380 beads?

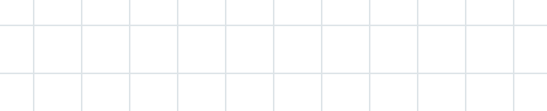
EVIDENCE TO USE

- 380 beads
- 24 beads per bracelet
- Bags hold 24 beads each
- All three questions use $380 \div 24$

1. Find $380 \div 24$ as a quotient and a remainder.

2. For each question, choose a rule: drop the remainder, report the remainder, or round up.

3. Answer Questions A, B, and C with units.



TRY IT • Tickets come in books of 12. The club needs 150 tickets for a show. How many ticket books must the club buy?

Name _____ Date _____

LEVEL 3



Write a plan that names each in-between amount before you calculate anything.

Grade 5. The art club is making 4 banners. Each banner needs 2.5 meters of fabric, and each banner will be 0.8 meter tall. The club already has a 1.5-meter piece of the same fabric. Fabric costs \$4.00 per meter (sample price). For both problems on this page, fabric pieces may be joined, and all available fabric can be used with no waste. How much will the club spend to buy the rest of the fabric it needs? Make a plan before you compute.

EVIDENCE TO USE

- 4 banners
- 2.5 meters of fabric per banner
- Each banner is 0.8 meter tall
- Already have 1.5 meters (pieces may be joined)
- Fabric: \$4.00 per meter

1. Write a plan that names each in-between amount, such as 'total fabric needed.'

2. Sort the numbers. Which meter amount is not needed, and why?

A blank sheet of graph paper with a grid pattern. The grid consists of 10 columns and 8 rows of squares. The paper has rounded corners and a light gray border.

3. Carry out your plan, then check the answer with an estimate.

TRY IT • New situation: Later in the year, the club makes 3 small banners for a different event, and each uses 1.5 meters of fabric. A teacher donates a 2-meter piece of the same fabric. At \$4.00 per meter, how much will the club spend to buy the rest?

Name _____ Date _____

LEVEL 3



Compare unit prices, then plan the cheapest way to buy exactly what is needed.

Grade 6. The school store sells colored pencils in two packs (sample prices). Pack A: 12 pencils for \$3.60. Pack B: 20 pencils for \$5.40. Both packs have the same kind of pencil. Nadia needs exactly 60 pencils for an art project. The store is open 5 days a week. Which pack has the lower price per pencil? Then decide how Nadia can buy exactly 60 pencils for the least money.

SCHOOL STORE

Pack A pencils
12 pencils

\$3.60

unit price: _____

SCHOOL STORE

Pack B pencils
20 pencils

\$5.40

unit price: _____

EVIDENCE TO USE

- Pack A: 12 pencils for \$3.60
- Pack B: 20 pencils for \$5.40
- Nadia needs exactly 60 pencils
- The store is open 5 days a week

1. Make a rate table or double number line for each pack.

[illegible]

2. Find the unit price of each pack in cents per pencil.

[illegible]

3. Choose the better buy and find the cost of exactly 60 pencils.

TRY IT • Pack C has 8 erasers for \$2.00. Pack D has 5 erasers for \$1.35. Which pack is the better buy?

1. Need It or Not? Garden Rows

LEVEL 1

48 tomato plants. Need: 6 rows and 8 plants per row. Don't Need: 14 members and 2 meeting days.

WORKED REASONING • The question asks about plants, so the answer unit is plants. The story shows equal groups: 6 rows with 8 plants in each row. Picture: an array with 6 rows and 8 columns. $6 \times 8 = 48$ plants. The 14 members would answer a question about people, and the 2 days would answer a question about meetings. Neither one changes how many plants are in the rows. Check: 5 rows would hold 40 plants, so 48 plants in 6 rows makes sense.

WATCH FOR • Some students use every number they see, for example $6 \times 8 + 14 = 62$. Sorting the numbers by what they describe (plants, people, days) shows that only the plant numbers belong in this answer.

TRANSFER • 36 pepper plants ($4 \times 9 = 36$). The 3 members and the 20 minutes are not needed.

2. Diagram Match-Up: Model Bridges

LEVEL 1

Diagram B. Leo's bridge is 36 inches long.

WORKED REASONING • This is a multiplicative comparison. Maya's bridge is the one-copy amount, 9 inches. Leo's bridge is 4 copies of that amount, so Diagram B fits. $4 \times 9 = 36$ inches. Diagram A shows $9 + 4$, which would fit a story where a bridge gets 4 inches longer. Diagram C shows 9 split into 4 equal parts, which would fit a bridge one-fourth as long. Check: 36 inches is much longer than 9 inches, which fits '4 times as long.'

WATCH FOR • Students may add $9 + 4 = 13$ because they see two numbers and the comparison sounds like 'more.' The phrase 'times as long' means copies of a length, not 4 extra inches.

TRANSFER • 21 feet. Omar's bar is 3 copies of Lily's 7-foot bar: $3 \times 7 = 21$.

9. Need It or Not? Store Change

LEVEL 2

\$1.35 in change (135 cents). The total cost is \$8.65.

WORKED REASONING • The question asks for money back, so the unit is dollars. Need: 3, \$2.45, \$1.30, and \$10. Don't Need: 1.2 miles (a distance) and 2 friends (people). Step 1: the notebooks cost $3 \times \$2.45 = \7.35 . Step 2: the total cost is $\$7.35 + \$1.30 = \$8.65$. Step 3: the change is $\$10.00 - \$8.65 = \$1.35$. Estimate: $3 \times \$2.50 + \$1.30 = \$8.80$, so change of a little more than \$1 fits.

WATCH FOR • Students may subtract only one notebook price ($\$10.00 - \$2.45 - \$1.30 = \6.25). Three notebooks means 3 equal groups of \$2.45.

TRANSFER • \$0.10. $2 \times \$2.45 = \4.90 , and $\$5.00 - \$4.90 = \$0.10$. The friend's pen is not needed.

10. Remainder Decisions: One Division, Three Questions

LEVEL 2

Question A: 15 complete bracelets. Question B: 20 beads are left over. Question C: 16 bags.

WORKED REASONING • $380 \div 24 = 15 \text{ R}20$, because $15 \times 24 = 360$ and $380 - 360 = 20$. A: a bracelet needs 24 beads, so drop the remainder: 15 bracelets. B: the question asks for the leftover beads, so report the remainder: $380 - 360 = 20$ beads. C: every bead must be stored, so the 20 extra beads need one more bag: 16 bags. Check: 15 bags hold only 360 beads, but 16 bags hold 384.

WATCH FOR • Students may give 15 R20 as the answer to all three questions. The remainder rule depends on what each question asks for, not on the division itself.

TRANSFER • 13 ticket books. $150 \div 12 = 12 \text{ R}6$: twelve books provide 144 tickets, which is 6 short of 150. The club must buy one more book, so it needs 13 books, which provide 156 tickets.

17. Plan Before You Compute: Banner Fabric

LEVEL 3

\$34.00 (3,400 cents). The club needs to buy 8.5 meters of fabric.

WORKED REASONING • Because the fabric pieces may be joined, all of the fabric already available can count toward the total needed. Plan: (1) find the total fabric needed, (2) find the fabric still to buy, (3) find the cost. Step 1: $4 \times 2.5 = 10$ meters. Step 2: $10 - 1.5 = 8.5$ meters to buy. Step 3: $8.5 \times \$4.00 = \34.00 . The 0.8 meter is a height, not fabric to buy, because 2.5 meters per banner already tells how much fabric each banner uses. Estimate: about 8 meters at \$4 per meter is \$32, which is close to \$34.

WATCH FOR • Students may skip an in-between step and pay for all 10 meters (\$40), or subtract the 0.8 meter because it has the same unit. A written plan shows the job of each quantity.

TRANSFER • \$10.00. $3 \times 1.5 = 4.5$ meters needed, $4.5 - 2 = 2.5$ meters to buy, and $2.5 \times \$4.00 = \10.00 .

18. Rate Table Detective: Better Buy Pencils

LEVEL 3

Pack B is the better buy: 27 cents per pencil, compared with 30 cents per pencil for Pack A. Three packs of B cost \$16.20 for 60 pencils.

WORKED REASONING • Unit prices: Pack A is $360 \div 12 = 30$ cents per pencil. Pack B is $540 \div 20 = 27$ cents per pencil, so Pack B is the better buy. For exactly 60 pencils: 5 packs of A cost $5 \times \$3.60 = \18.00 , and 3 packs of B cost $3 \times \$5.40 = \16.20 . Mixing packs does not work: 1 or 2 packs of B leave 40 or 20 pencils, and neither is a multiple of 12. So Nadia should buy 3 packs of B. The 5 days are not needed.

WATCH FOR • Students may choose Pack A because \$3.60 is the smaller price. That compares totals for different numbers of pencils instead of comparing prices for the same number of pencils.

TRANSFER • Pack C. Pack C costs $200 \div 8 = 25$ cents per eraser, and Pack D costs $135 \div 5 = 27$ cents per eraser.