

Decimal Detectives

Build and draw models to compare decimal values.

GRADE 4 • TEKS 4.2.F

4.2.F "compare and order decimals using concrete and visual models to the hundredths;"

NAME _____

DATE _____

START WITH THE WHOLE-NUMBER PART

Compare whole-number parts first. If equal, compare tenths, then hundredths. Trailing zeroes do not change a decimal: $0.3 = 0.30$. Materials per pair: two \$1 bills or labeled paper dollar cards, 20 dimes and 60 pennies (real or play money). Reuse them after each task. One dollar is one whole; a dime is 0.1 and a penny is 0.01. Each 10 by 10 grid is one whole: one row is 0.1 and one cell is 0.01.

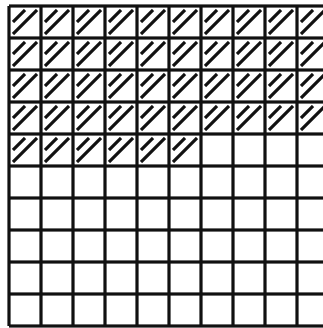
WORKED EXAMPLE

Build 0.46 and 0.49 with money. Grid A shows 0.46 and grid B shows 0.49, using same-sized wholes. Which value is greater?

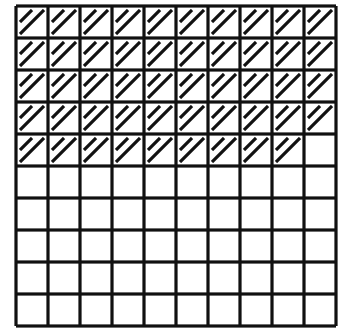
- Each has 4 dimes. Compare 6 pennies with 9 pennies.
- The shaded whole grids have 46 and 49 cells; 49 hundredths is greater.

Answer: $0.46 < 0.49$.

Grid A



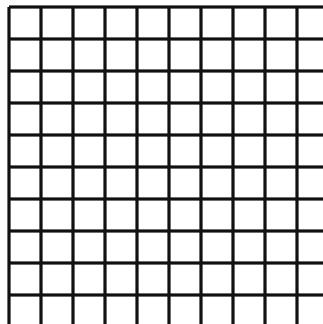
Grid B



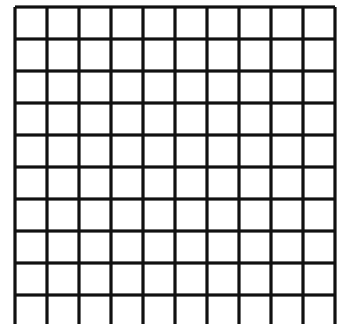
PRACTICE 4 problems

- 1** Build 0.72 and 0.70 with money. Shade grid A for 0.72 and B for 0.70. Write $<$, $>$, or $=$ and explain the difference in the models.

Grid A

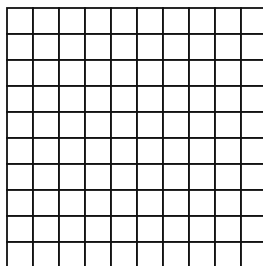


Grid B



- 2** Build 0.3 with dimes, then trade for pennies. Shade the grid for that amount. Compare 0.3 and 0.30 with a symbol and explain why they match.

One whole = 1



- 3** Build 0.58, 0.85, and 0.68 with money one at a time. Sketch the dimes as D and pennies as P in the space below; label each model. Order the amounts from least to greatest and explain the first differing place.

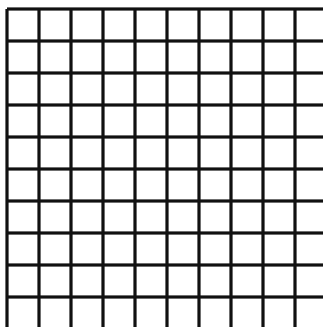
- 4** Build 0.99 and 1.01 with money. Sketch and label both models using \$1, D, and P. Compare the amounts. Explain why comparing only the tenths would give the wrong answer.

APPLY IT Show your work

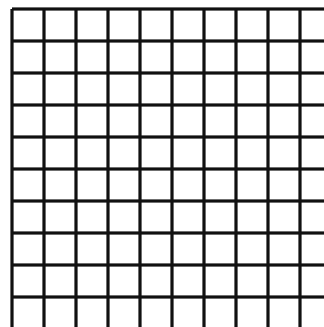
- 1** Ava has 1.7 liters of paint, Ben has 1.07 liters, and Chen has 1.70 liters. Use the money to model the numbers, with one dollar representing one liter. Sketch labeled models using \$1, D, and P. Who has most? Write an ordering that shows the tie.

- 2** Two lengths are 0.84 m and 0.48 m. Build each decimal with the money. Shade A for 0.84 and B for 0.48. Which length is greater? Write a comparison and explain using tenths.

Grid A



Grid B



CHALLENGE One step up

Lena says 0.4 is less than 0.39 because 4 is less than 39. Build both amounts with money and trade the dimes for pennies. Explain the mistake and write the correct comparison.

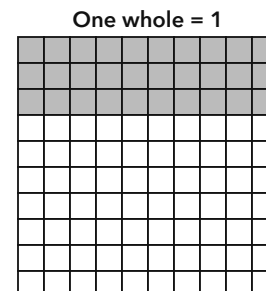
Observe the concrete money models before students draw or write. For sketches, D means one dime and P one penny; a labeled \$1 card means one whole. Accept correct models with different equivalent coin trades. Grid cells are hundredths of the same whole. The brief sketches can be rows of D/P symbols; no detailed coin art is needed.

PRACTICE 1

$0.72 > 0.70$. A has 72 shaded cells; B has 70. The two extra pennies or cells make 0.72 greater.

PRACTICE 2

3 dimes = 30 pennies. Shade 30 cells; $0.3 = 0.30$.

**PRACTICE 3**

Models: 5 D + 8 P; 8 D + 5 P; 6 D + 8 P. $0.58 < 0.68 < 0.85$; the tenths decide the order.

PRACTICE 4

9 D + 9 P versus one \$1 card + 1 P. $0.99 < 1.01$ because the second amount has one whole dollar.

APPLY IT 1

$1.07 < 1.7 = 1.70$. Ava and Chen tie for most. Ben: \$1 + 7 P; Ava and Chen: \$1 + 7 D.
The money is a place-value model of the numbers, not the price of the paint.

APPLY IT 2

$0.84 > 0.48$. A has 84 shaded cells and B has 48; eight tenths is greater than four tenths.
Use the same whole for both lengths. Money models the numerical amounts, not prices.

CHALLENGE

$0.4 = 0.40 > 0.39$. Four dimes is 40 pennies, one more than 39 pennies. Comparing 4 tenths with 39 hundredths as if they were the same unit is wrong.