Dividing Fractions

InstaGraphs TM Isometric LIFT HERE www.instagraphs.com	Teacher notes: Ask students to fi
	answers to the division questions.
	Give students a few minutes to
	work - even if puzzled. A hint to
	give: What's the answer to $20 \div 5?$
	Ans=4 Ask them why The s" fit:
	into" the 20 four times. Once cue
	with the "fits into" idea, tell them
	find the solutions to the picture
*//////////	problems.
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Teacher notes: On this page, the key point is to make sure the students understand the answers based on the visual images. You are trying to make them feel 100% confident in the solutions. This will help to reinforce their confidence in the division rule which is being established.

Dividing Fractions

rule w	hich is being established.	
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InstaGraphs TM Isometric LIFT HERE www.instagraphs.com		agra
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	the blue	Llea
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-7) = 4½ =	4 whole and another half	rtes
< N M + 5, 6 N 8 8 E	of one fit into the yellowined.	non

Teacher notes: Here we start to revisit the fraction notation (based on yellow hexagon = 1 whole). Be sure to change mixed fractions to improper form as this helps them "see things" in the next step. Dividing Fractions Also reinforce why answers are < or > than 1. Find the answers to the following division questions InstaGraphs^{tel} Isometric LIFT HERE www.instagraphs.com = 3 3 of the 📤 fit into the $\frac{1}{2}$ \div $\frac{1}{6}$ 2 red piece 3 2 of the 🍐 fit into the = 2 $\frac{1}{3} \div \frac{1}{6}$ blue piece 8 10 x ÷ / = 3 3 of the the fit into the = yellow piece 2 www.instagraphs.com LIFT HERE InstaGraphs™ Isometric ! whole blue piece and another (+) (+ + = 12 or 3) half of it fit into the red $\frac{1}{2}$ $\frac{1}{3}$ 1 Only 1 of the my is needed of Clear Educational Solutions 5) \wedge \div \swarrow = $\frac{1}{2}$ to cover the green piece 2 If you cut the A into $\begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} \begin{pmatrix} 1 \\ -1 \\ -1 \end{pmatrix} \begin{pmatrix} 1 \\ -1 \end{pmatrix} \begin{pmatrix} 1 \\ -1 \\ -1 \end{pmatrix} \begin{pmatrix} 1 \\ -1 \end{pmatrix} \begin{pmatrix}$ × 3 parts, 2 of them fit into the blue = 4 = or 92 Courtesy 4 whole and another half of one fit into the yellowigred. 3/2 : or p 3 of 6

attention to the bottom right denom. Big piece : smaller piece ans >1 Dividing Fractions smaller piece = bigger piece anski (O< ans<1) Find the answers to the following division questions InstaGraphsTM Isometric LIFT HERE www.instagraphs.com ; I) A ÷ A = 3 3 of the 📤 fit into the $\begin{array}{c} \circ \\ \circ \\ \circ \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \end{array} \begin{array}{c} 1 \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \end{array} \begin{array}{c} \cdot \\ \circ \\ \end{array} \begin{array}{c} \cdot \\ \end{array} \end{array} \begin{array}{c} \cdot \\ \end{array} \end{array} \begin{array}{c} \cdot \\ \end{array} \begin{array}{c} \cdot \\ \end{array} \end{array} \begin{array}{c} \cdot \\ \end{array} \begin{array}{c} \cdot \\ \end{array} \end{array}$ 2 red piece = 2 of the stit into the blue piece 9 \$ × _3) <u>-</u> = 3 3 of the the fit into the 1 yellow piece · · · · · · 2 www.instagraphs.co InstaGraphsTM Isometric LIFT HERE www.instagraphs.com ! whole blue piece and another (+) (+ = 12 or 3) half of it fit into the red · 1 · 1 · 2 · 3 · 44 Only 1 of the my is needed Educational Solution 5) $\dot{+} \div \dot{-} = \frac{1}{2}$ to cover the green piece 2 If you cut the and into x 3 parts, 2 of them fit into Courtesy of Clear the blue $= \frac{1}{2} = \frac{1}{2} = \frac{1}{2} = \frac{1}{2} = \frac{1}{2}$ 10 4 whole and another half of one fit into the yellow's red. or 32 : 34 p 4 of 6

Teacher notes: You want students to notice that the right hand denominator" ends up on top" to get to the final answers established via the concrete pieces. A hint would be to draw their

Teacher notes: Now show them that a consistent rule works for all 7 questions to go from the fractions to the solutions they know to be true from the concrete pieces.

Big piece : smaller piece ans >1 Dividing Fractions smaller piece - bigger piece anski (O< ans<1) Find the answers to the following division questions InstaGraphs™ Isometric LIFT HERE www.instagraphs.com () (= 3 3 of the 📤 fit into the 2 1 : 1 red piece = 1 × 6h 2) 🥢 ÷ 🔺 = 2 2 of the A fit into the blue piece 2 3 + 6+ 2 1 × 6 -× 3) - = 3 3 of the the fit into the = yellow piece 22 www.instagraphs.com L X 3 LIFT HERE InstaGraphs^{ter} Isometric www.instagraphs.com ! whole blue piece and another = 12 or 3 ő.4) 🔼 ÷ 🚺 half of it fit into the red 2 - 3+ 4 1 × 3 Only 1 of the my is needed Courtesy of Clear Educational Solution 5) $\wedge \div = \frac{1}{2}$ $\frac{1}{6} \div \frac{1}{3} = 1$ to cover the green piece 2 $\frac{1}{6} \times \frac{3}{1}$ $\begin{array}{c} 6 \\ 1 \\ \frac{1}{3} \\ \frac{1}{2} \\ \frac$ If you cut the and into # 3 parts, 2 of them fit into 1 × 2 the blue 4 whole and another half of one fit into the yellowired. 12 : -3 : 13 or p 5 of 6 32 × 3

Teacher note: Now that students have either constructed/derived the algorithm or that at the least they see a concrete verification that the rule works, we can "give them" the rule and go through examples of its application.

When dividing fractions, what does the rule appear tobe? (Invert the second fraction) (and change = to multiplication Example 1: InstaGraphs™ Isometric LIFT HERE SONCRETE CHECKS 15: 2 (answer should be > 1) 11 × 3 = 11 or 23 A B3 We need the B 1/2 entire (A-5) = twice and also another 3 of it.s Example 2: $\bigtriangleup \div \{\star\}$ www.instagraphs.com 1 - 13 (answer should be <1) All of this won't I we need invert this fit so we cut it into n , smaller pieces a = = fraction - convertfirst! 3 of the 8 pieces are needed. $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$ Courtesy of Clear Educational Solutions Example 3: $\frac{11}{4} \times \frac{6^3}{11} = \frac{3}{2} \text{ or } |\frac{1}{2}$ 23 - 15 (convert to improper fractions 3 multiply 1 - 1 Oinvert the second fruction and change to x