



KING EDWARD VI
HANDSWORTH GRAMMAR
SCHOOL FOR BOYS



KING EDWARD VI
ACADEMY TRUST
BIRMINGHAM

Year 7

Mathematics

Unit 3 Student

2026

2027

HGS Maths



Tasks



Dr Frost Course



Name: _____

Class: _____

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1 Fractions

Notation

The diagram illustrates the components of a fraction. It features the fraction $\frac{3}{4}$ centered on the page. A red arrow points from the word "Numerator" to the number 3. A green arrow points from the word "Denominator" to the number 4. A blue arrow points from the text "Fraction Bar (Vinculum)" to the horizontal line separating the numerator and denominator.

Numerator

3

—

4

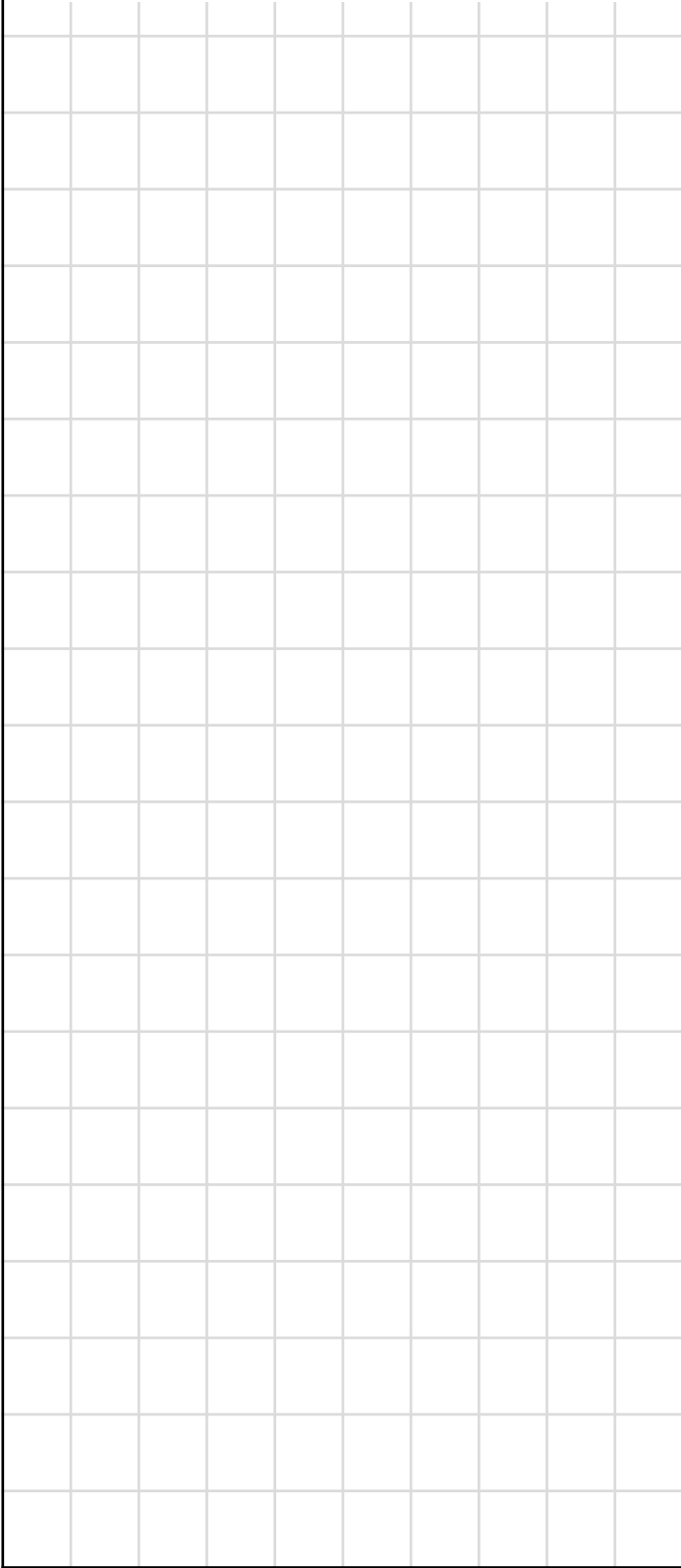
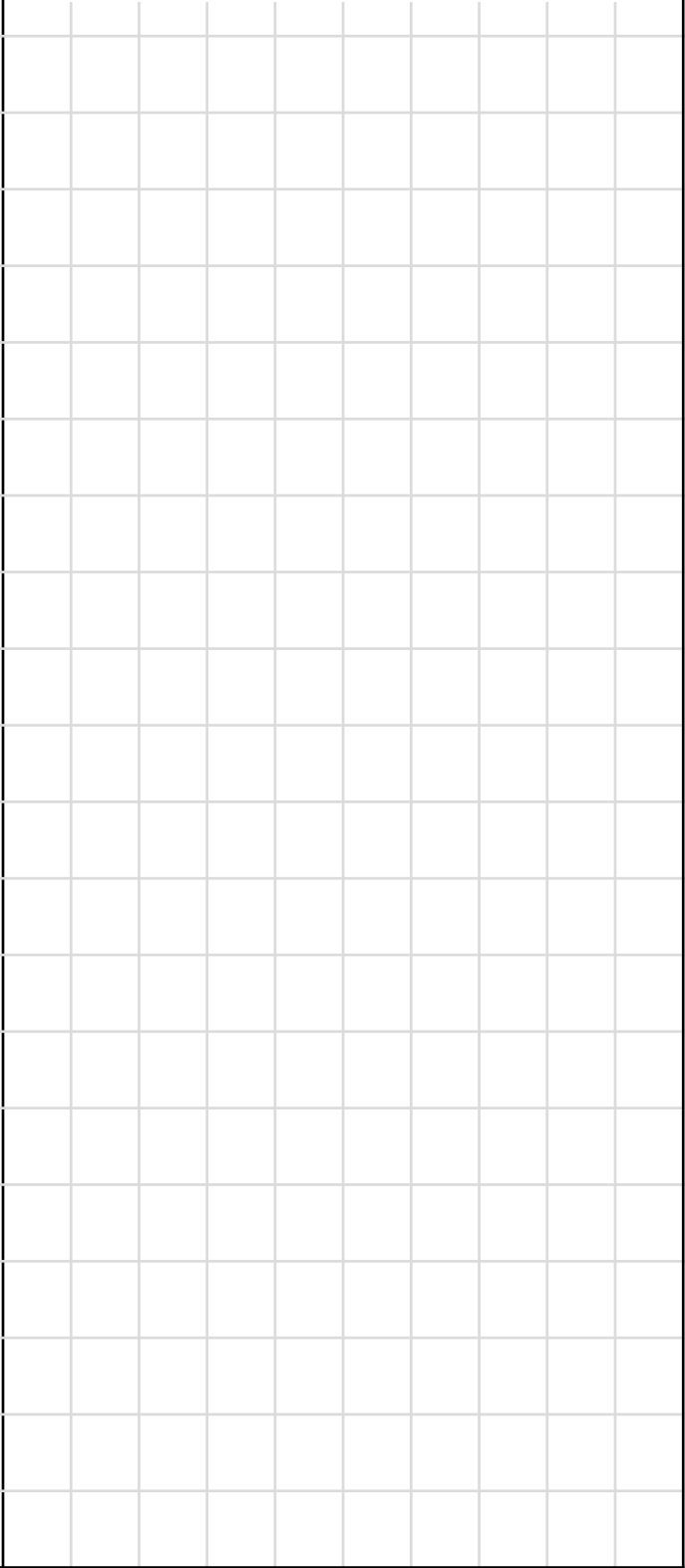
Denominator

Fraction Bar
(Vinculum)

1.1 Equivalent Fractions

Worked Example	Your Turn
Multiply these fractions so they have a denominator of 8: a) $\frac{1}{2}$ b) $\frac{3}{4}$ c) $\frac{8}{16}$	Multiply these fractions so they have a denominator of 12: a) $\frac{1}{2}$ b) $\frac{3}{4}$ c) $\frac{9}{36}$

1.2 Simplifying Fractions

Worked Example	Your Turn
Express 50p as a fraction of £4. Give your answer in its simplest form. 	Express 20p as a fraction of £10. Give your answer in its simplest form. 

1.3 Improper Fractions and Mixed Numbers

1.4 Adding and Subtracting Fractions

Fill in the Gaps

Question	With a Common Denominator	Unsimplified Answer	Simplified Answer (where possible)
$\frac{1}{3} + \frac{1}{6}$	$\frac{2}{6} + \frac{1}{6}$	$\frac{3}{6}$	$\frac{\square}{\square}$
$\frac{1}{4} + \frac{2}{3}$	$\frac{3}{12} + \frac{\square}{12}$	$\frac{\square}{12}$	$\frac{\square}{12}$
$\frac{2}{5} + \frac{1}{4}$	$\frac{\square}{20} + \frac{\square}{20}$	$\frac{\square}{20}$	$\frac{\square}{20}$
$\frac{5}{6} - \frac{1}{2}$	$\frac{\square}{6} - \frac{\square}{6}$	$\frac{\square}{6}$	$\frac{\square}{\square}$
$\frac{7}{8} - \frac{2}{3}$	$\frac{21}{\square} - \frac{16}{\square}$	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$\frac{7}{9} - \frac{3}{4}$	$\frac{\square}{\square} - \frac{\square}{\square}$	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$\frac{\square}{\square} + \frac{\square}{\square}$	$\frac{\square}{35} + \frac{14}{35}$	$\frac{24}{35}$	$\frac{24}{35}$
$\frac{\square}{\square} - \frac{\square}{\square}$	$\frac{\square}{\square} - \frac{5}{\square}$	$\frac{6}{20}$	$\frac{\square}{\square}$
$\frac{\square}{\square} + \frac{\square}{\square}$	$\frac{\square}{\square} + \frac{7}{24}$	$\frac{\square}{\square}$	$\frac{2}{3}$
$\frac{13}{15} - \frac{\square}{\square}$	$\frac{26}{\square} - \frac{\square}{\square}$	$\frac{\square}{\square}$	$\frac{7}{10}$
$\frac{3}{10} + \frac{\square}{\square} + \frac{\square}{\square}$	$\frac{\square}{\square} + \frac{5}{20} + \frac{\square}{\square}$	$\frac{\square}{\square}$	$\frac{9}{10}$
$\frac{\square}{\square} + \frac{\square}{\square} - \frac{\square}{\square}$	$\frac{5}{\square} + \frac{\square}{\square} - \frac{8}{\square}$	$\frac{\square}{36}$	$\frac{2}{3}$

Fill in the Gaps

Question	Write as Improper Fractions	Convert to Common Denominator	Answer as Improper Fraction	Answer as Mixed Number
$1\frac{1}{3} + 2\frac{1}{2}$	$\frac{4}{3} + \frac{5}{2}$	$\frac{8}{6} + \frac{15}{6}$	$\frac{23}{6}$	
$3\frac{2}{3} + 1\frac{1}{4}$	$\frac{11}{3} + \frac{5}{4}$	$\frac{44}{12} + \frac{15}{12}$		
$4\frac{1}{2} - 3\frac{2}{5}$	$\frac{9}{2} - \frac{17}{5}$	$\frac{\square}{10} - \frac{\square}{10}$		
$2\frac{3}{4} + 1\frac{5}{6}$	$\frac{11}{4} + \frac{11}{6}$			
$5\frac{1}{3} - 3\frac{2}{5}$				
$4\frac{3}{4} - 2\frac{5}{7}$				
$2\frac{8}{9} + 3\frac{3}{5}$				
$2\frac{13}{20} - \frac{7}{8}$				
	$\frac{7}{4} + \frac{12}{5}$			
	$\frac{\square}{9} - \frac{\square}{4}$	$\frac{100}{36} - \frac{45}{36}$		
	$\frac{3}{2} + \frac{\square}{\square}$		$\frac{29}{10}$	
$\square\frac{\square}{\square} - 2\frac{1}{6}$				$3\frac{7}{30}$

1.5 Multiplying Fractions

Fill in the Gaps

Question	Write as Improper Fractions	Multiply Numerators/ Denominators	Simplify (where possible)	Answer as Mixed Number
$1\frac{2}{3} \times 1\frac{1}{2}$	$\frac{5}{3} \times \frac{3}{2}$	$\frac{15}{6}$	$\frac{5}{2}$	
$2\frac{2}{5} \times 1\frac{1}{3}$	$\frac{12}{5} \times \frac{4}{3}$	$\frac{48}{15}$		
$3\frac{1}{2} \times 3\frac{1}{3}$	$\frac{7}{2} \times \frac{10}{3}$			
$1\frac{3}{4} \times 2\frac{5}{7}$				
$2\frac{4}{5} \times \frac{6}{7}$				
$2\frac{3}{10} \times 2\frac{2}{9}$				
$5\frac{2}{3} \times 1\frac{3}{4}$				
$3\frac{7}{10} \times 1\frac{3}{7}$				
$5\frac{1}{2} \times 2\frac{3}{4}$				
	$\frac{9}{5} \times \frac{10}{3}$			
	$\frac{\square}{\square} \times \frac{5}{3}$	$\frac{75}{12}$		
$\square \frac{\square}{\square} \times 2\frac{2}{5}$		$\frac{132}{20}$		

Worked Example	Your Turn
$\frac{9}{10}$ of the students in a class are female. $\frac{2}{5}$ of the female students play chess. Calculate the fraction of the class who are female chess players. Give your answer in its simplest form.	$\frac{3}{7}$ of a tennis club are men. $\frac{6}{11}$ of the men in the club are right-handed. Calculate the fraction of the club who are right-handed men. Give your answer in its simplest form.

1.6 Squaring and Square Rooting Fractions

1.7 Reciprocals

1.8 Dividing Fractions

Fill in the Gaps

Division	Equivalent Multiplication	Unsimplified Answer	Simplified Answer (where possible)
$\frac{2}{3} \div 6$	$\frac{2}{3} \times \frac{1}{6}$	$\frac{2}{18}$	
$\frac{2}{5} \div 4$	$\frac{2}{5} \times \frac{1}{4}$		
$\frac{5}{8} \div 10$	$\times$		
$\frac{7}{10} \div \frac{3}{4}$	$\frac{7}{10} \times \frac{4}{3}$		
$\frac{6}{11} \div \frac{2}{3}$	$\times$		
$\frac{1}{10} \div \frac{4}{5}$	$\times$		
$\frac{11}{16} \div \frac{3}{4}$	$\times$		
$\div$	$\frac{2}{9} \times \frac{6}{5}$		
$\div$	$\frac{3}{8} \times$	$\frac{12}{24}$	
$\div \frac{2}{5}$	$\times$	$\frac{15}{20}$	
$\div$	$\frac{5}{12} \times$	$\frac{10}{12}$	
$\div$	$\times \frac{1}{3}$		$\frac{3}{10}$

Fill in the Gaps

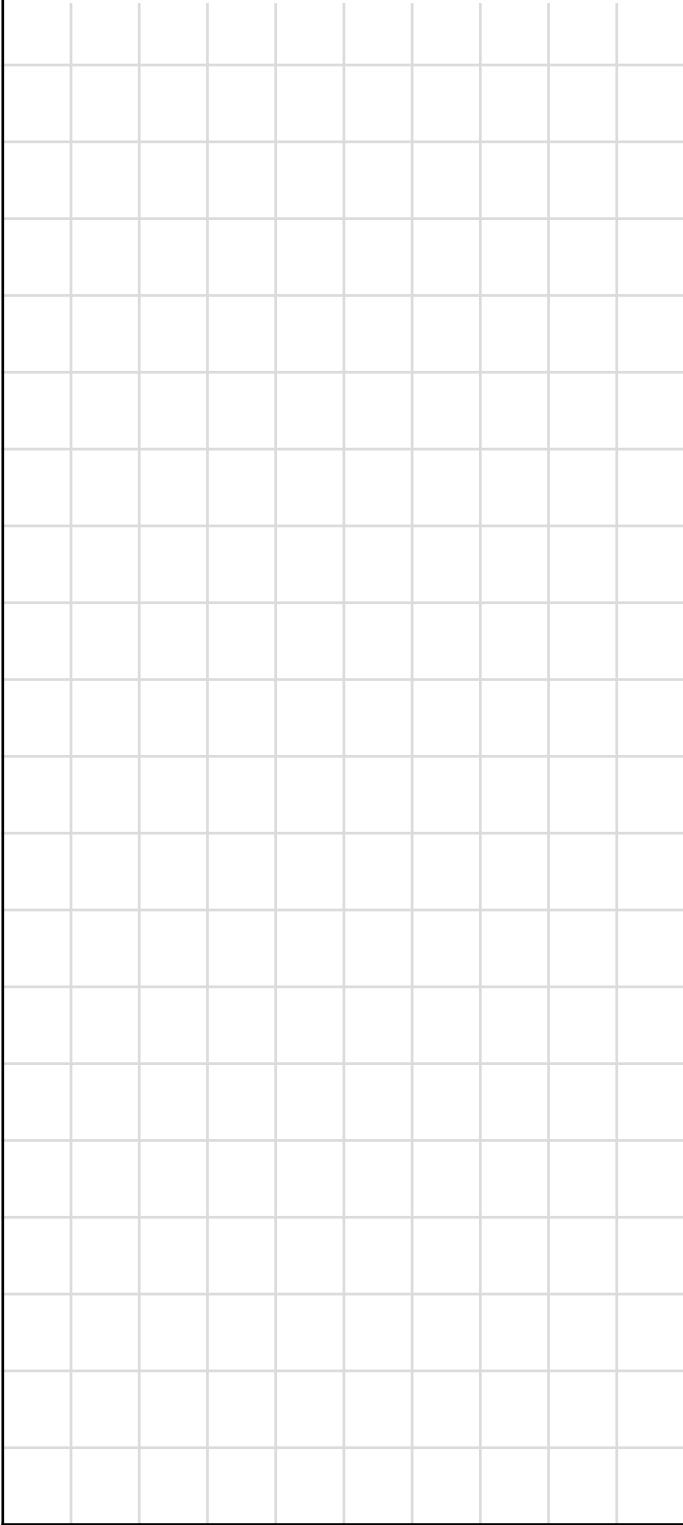
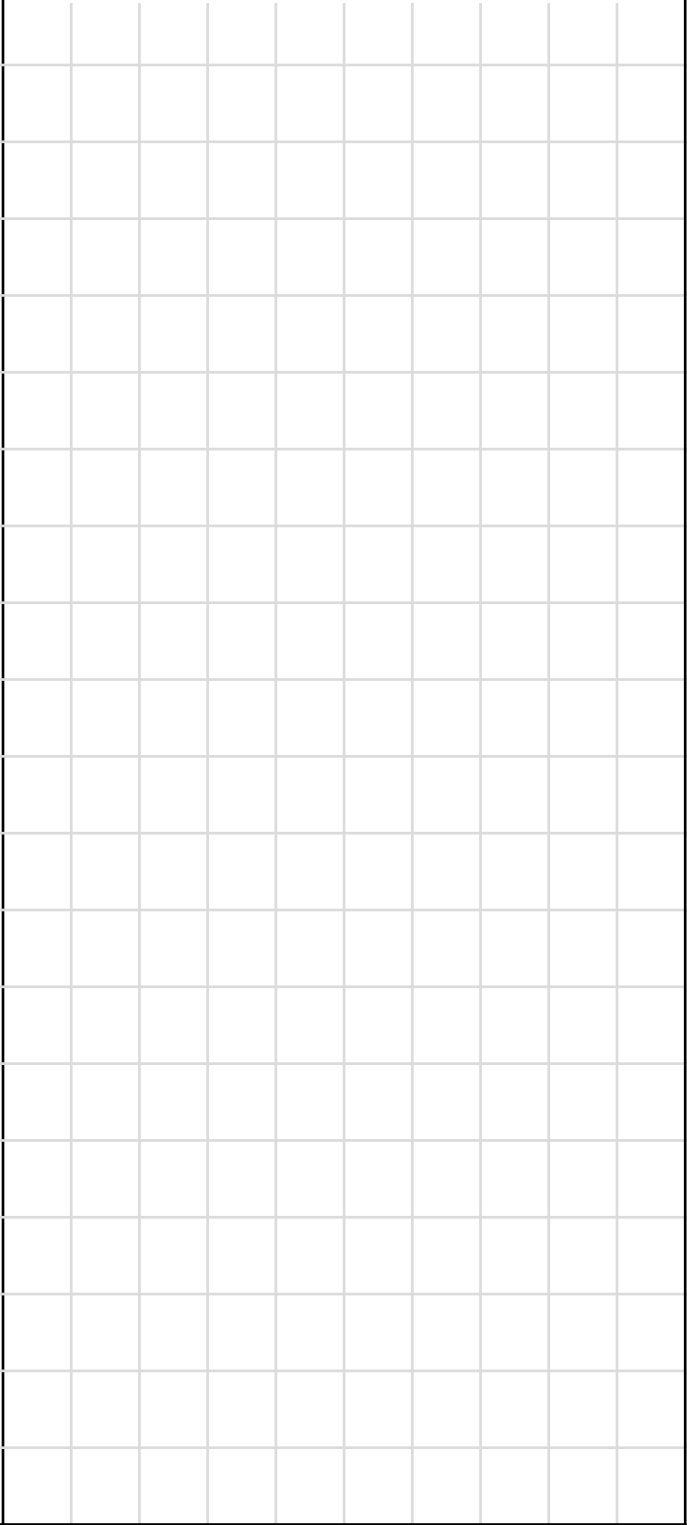
Question	Write as Improper Fractions	Write as a Multiplication	Multiply and Simplify (where possible)	Answer as Mixed Number
$2\frac{2}{3} \div 1\frac{1}{2}$	$\frac{8}{3} \div \frac{3}{2}$	$\frac{8}{3} \times \frac{2}{3}$	$\frac{16}{9}$	
$5\frac{1}{2} \div 1\frac{3}{4}$	$\frac{11}{2} \div \frac{7}{4}$	$\frac{11}{2} \times \frac{4}{7}$	$\frac{44}{14} = \begin{array}{ c } \hline \square \\ \hline \square \\ \hline \end{array}$	
$4\frac{3}{5} \div 2\frac{2}{3}$	$\frac{23}{5} \div \frac{8}{3}$	$\frac{23}{5} \times \frac{3}{8}$		
$7\frac{2}{3} \div 1\frac{1}{6}$	$\frac{23}{3} \div \frac{7}{6}$			
$3\frac{7}{8} \div \frac{3}{4}$				
$1\frac{4}{5} \div 2\frac{2}{3}$				
$4\frac{1}{6} \div 1\frac{5}{12}$				
$3\frac{3}{10} \div 1\frac{4}{5}$				
$5\frac{1}{2} \div 3\frac{2}{3}$				
	$\frac{19}{6} \div \frac{7}{5}$			
		$\frac{23}{9} \times \frac{3}{7}$		
$4\frac{1}{2} \div \begin{array}{ c } \hline \square \\ \hline \square \\ \hline \end{array}$				$1\frac{7}{20}$

1.9 Mixed Operations

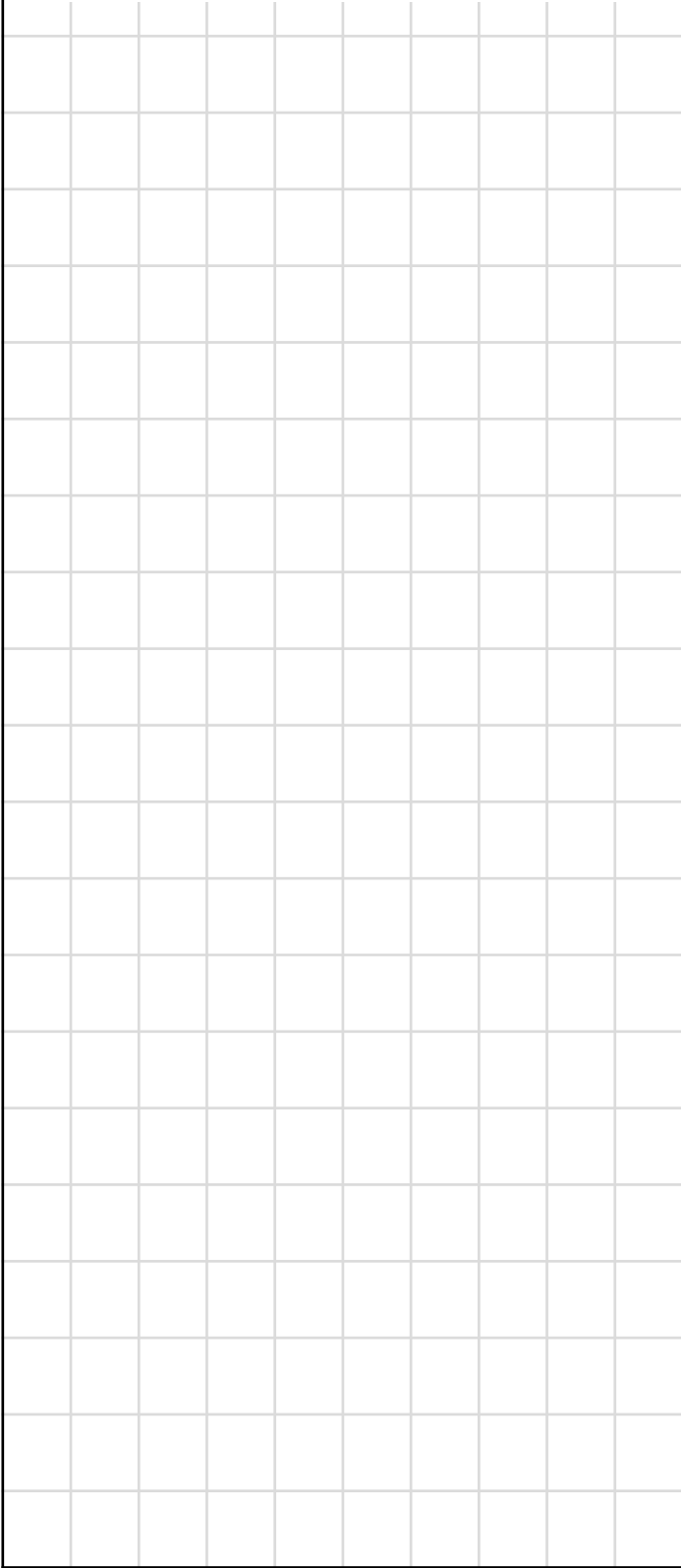
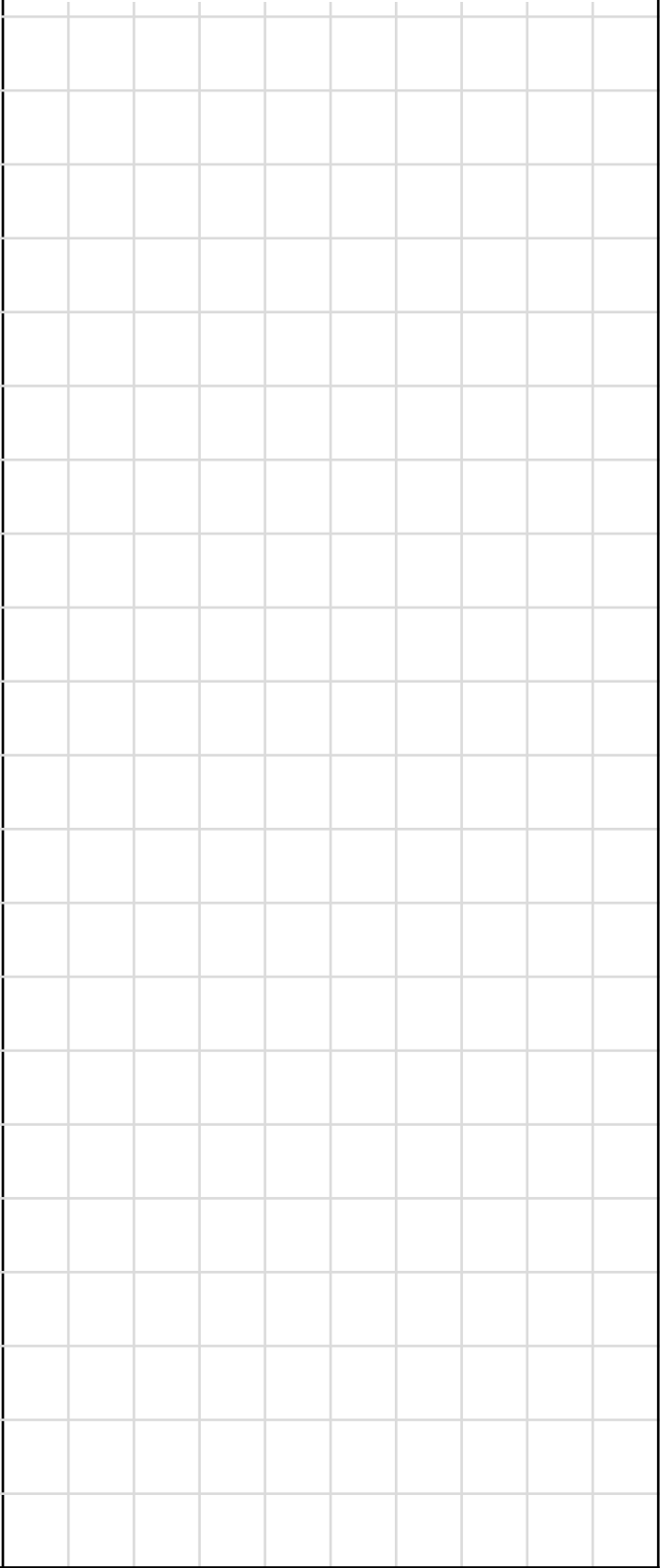
Worked Example	Your Turn
a) Calculate $\frac{5}{7} + \frac{5}{3} \times \frac{3}{2}$ Give your answer as an improper fraction in its simplest form. b) Evaluate $\frac{1}{2} \left(2\frac{1}{3} + \frac{4}{5} \right)$ Give your answer as a mixed number in its simplest form.	a) Calculate $\frac{3}{4} - \frac{3}{2} \times \frac{2}{5}$ Give your answer in its simplest form. b) Evaluate $\frac{1}{2} \left(1\frac{5}{7} - \frac{3}{5} \right)$ Give your answer in its simplest form.

1.10 Fractions of Amounts

1.11 Increasing or Decreasing by a Fraction

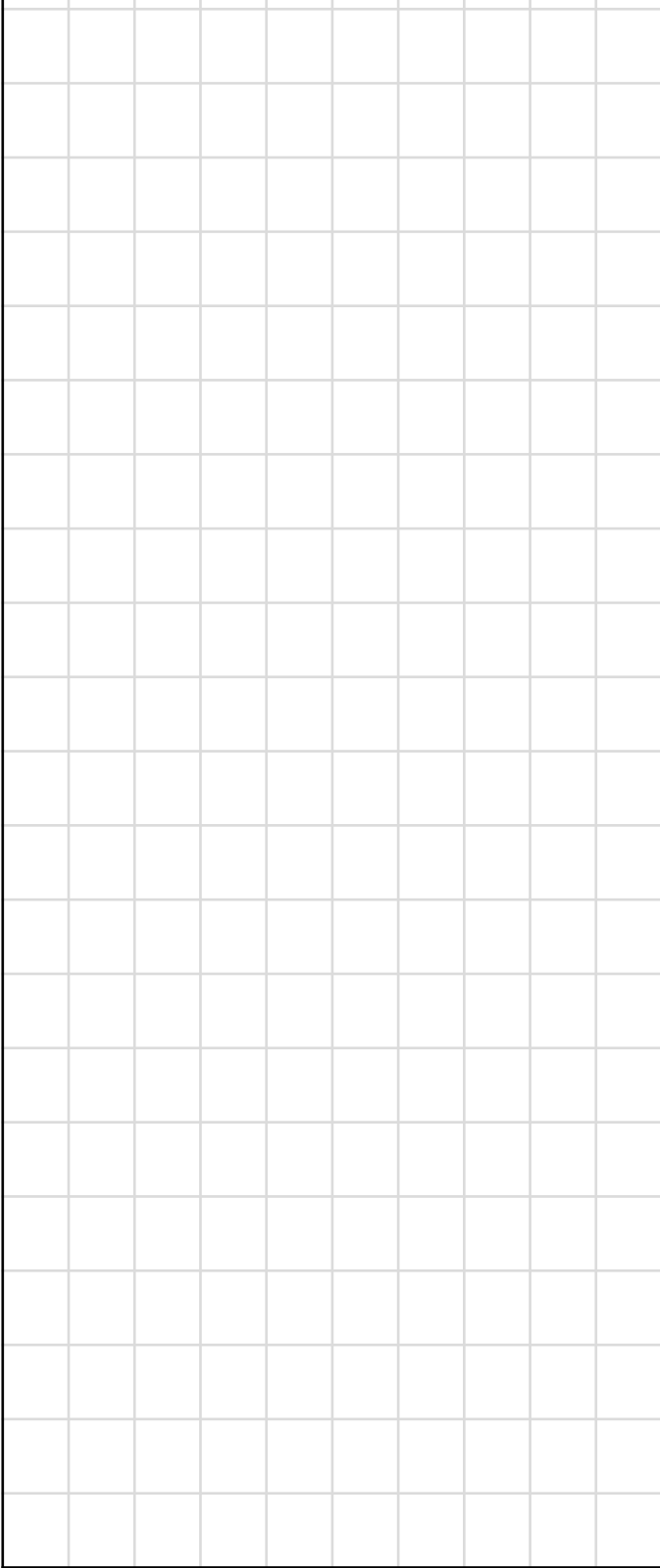
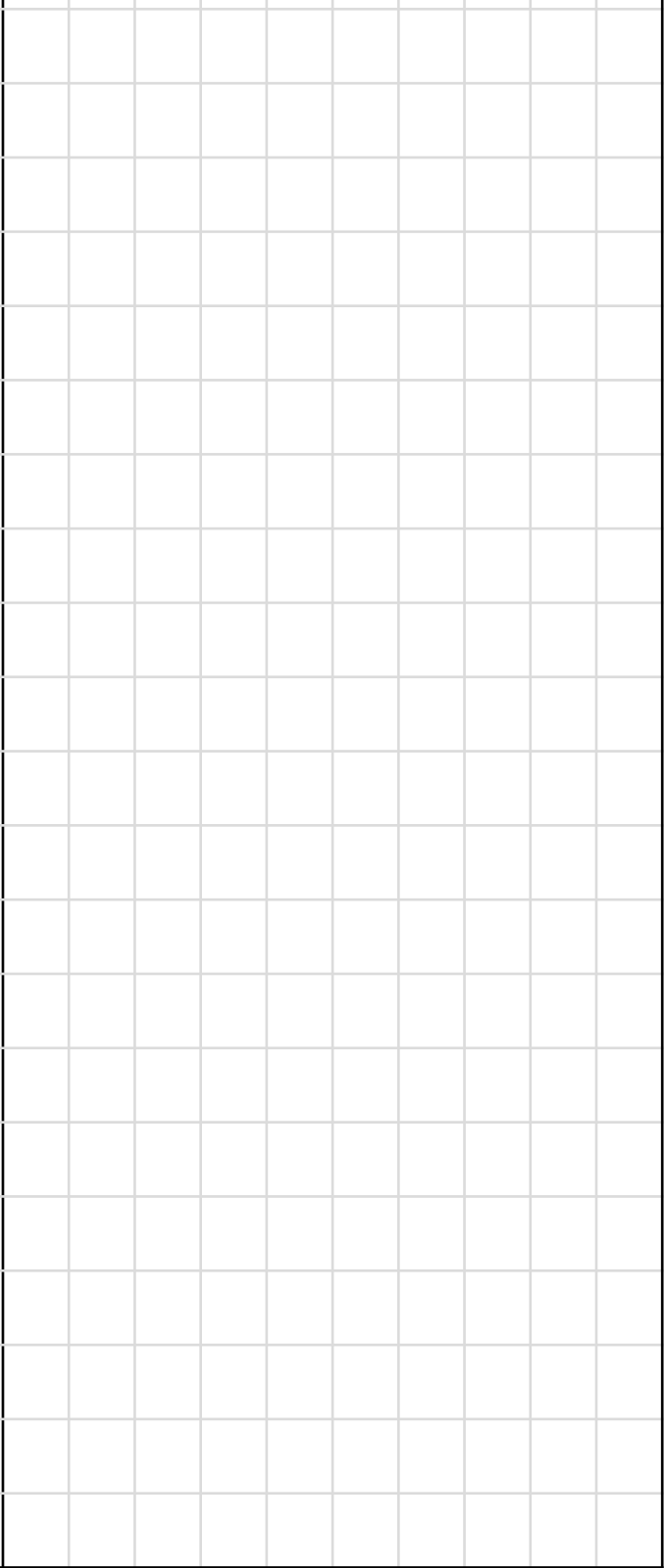
Worked Example	Your Turn
a) Increase 60 by $\frac{1}{5}$ b) Decrease 100 by $\frac{1}{5}$ 	a) Increase 60 by $\frac{4}{5}$ b) Decrease 200 by $\frac{3}{5}$ 

1.12 Reverse Fractions of Amounts

Worked Example	Your Turn
One ninth of a number is 40. What is one quarter of the original? 	One eighth of a number is 30. What is one fifth of the original? 

2 Decimals

2.1 Adding Decimals

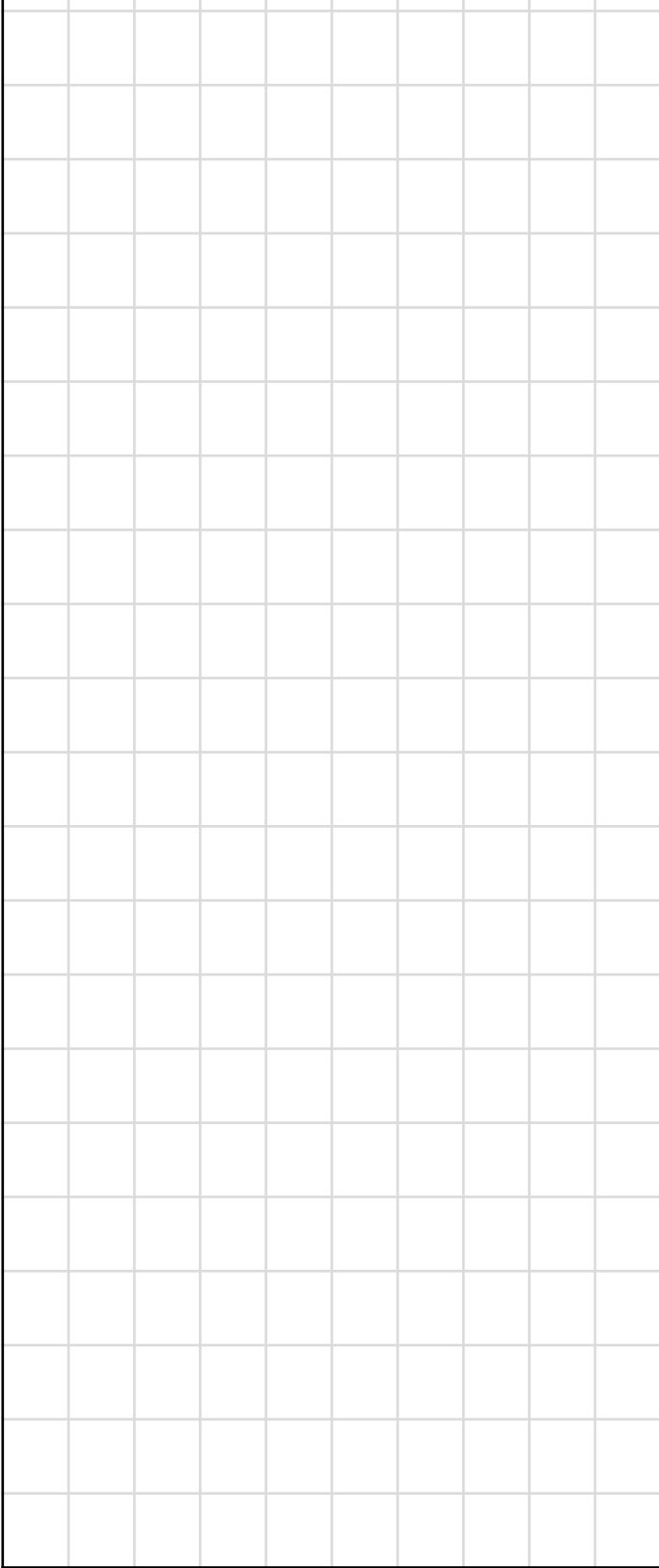
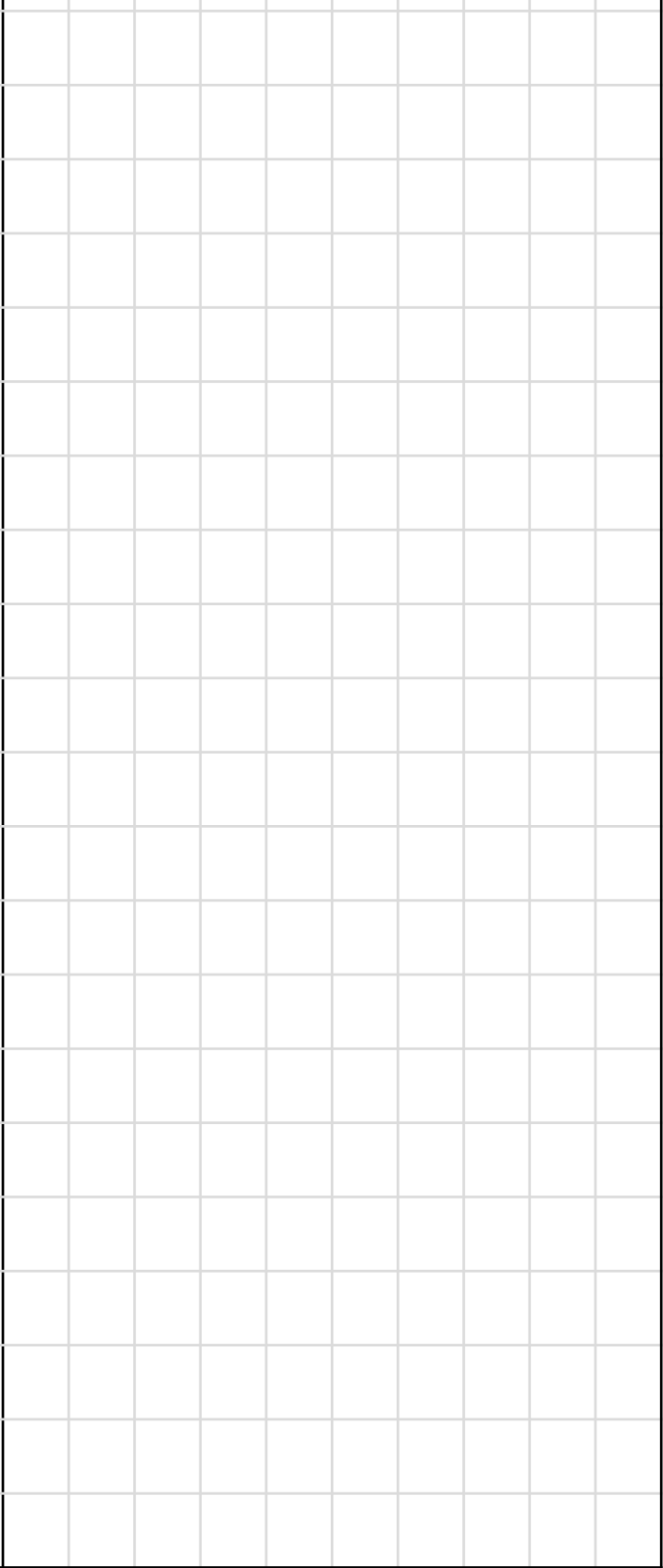
Worked Example	Your Turn
Work out: $481.4 + 35.23$ 	Work out: $369.5 + 47.68$ 

2.2 Subtracting Decimals

2.3 Related Calculations

2.4 Multiplying Decimals

2.5 Dividing Decimals

Worked Example	Your Turn
Work out: $1246.24 \div 8$ 	Work out: $1197.21 \div 7$ 

3 Solving Linear Equations

3.1 Terminology

- An **expression** is a collection of letters and numbers with no equals sign, for example $3x + 1$
- An **equation** contains an equals sign and an unknown letter to be solved, for example $3x + 1 = 10$
- A **formula** is a relationship between two or more letters, and it contains an equals sign, for example $A = bh$
- An **identity** is an equation that is always true, no matter what values are substituted, for example $2x + 3x = 5x$ (use $\equiv$)

3.2 One Step

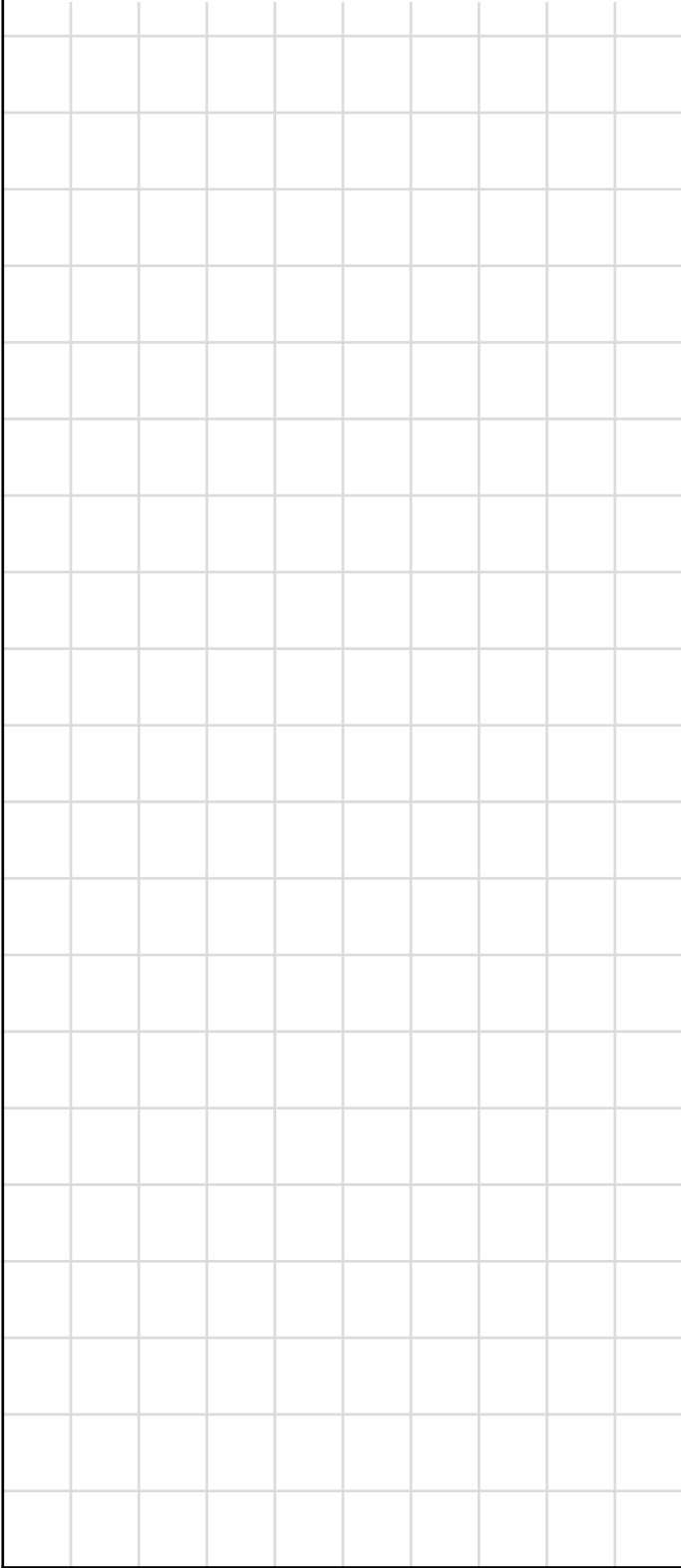
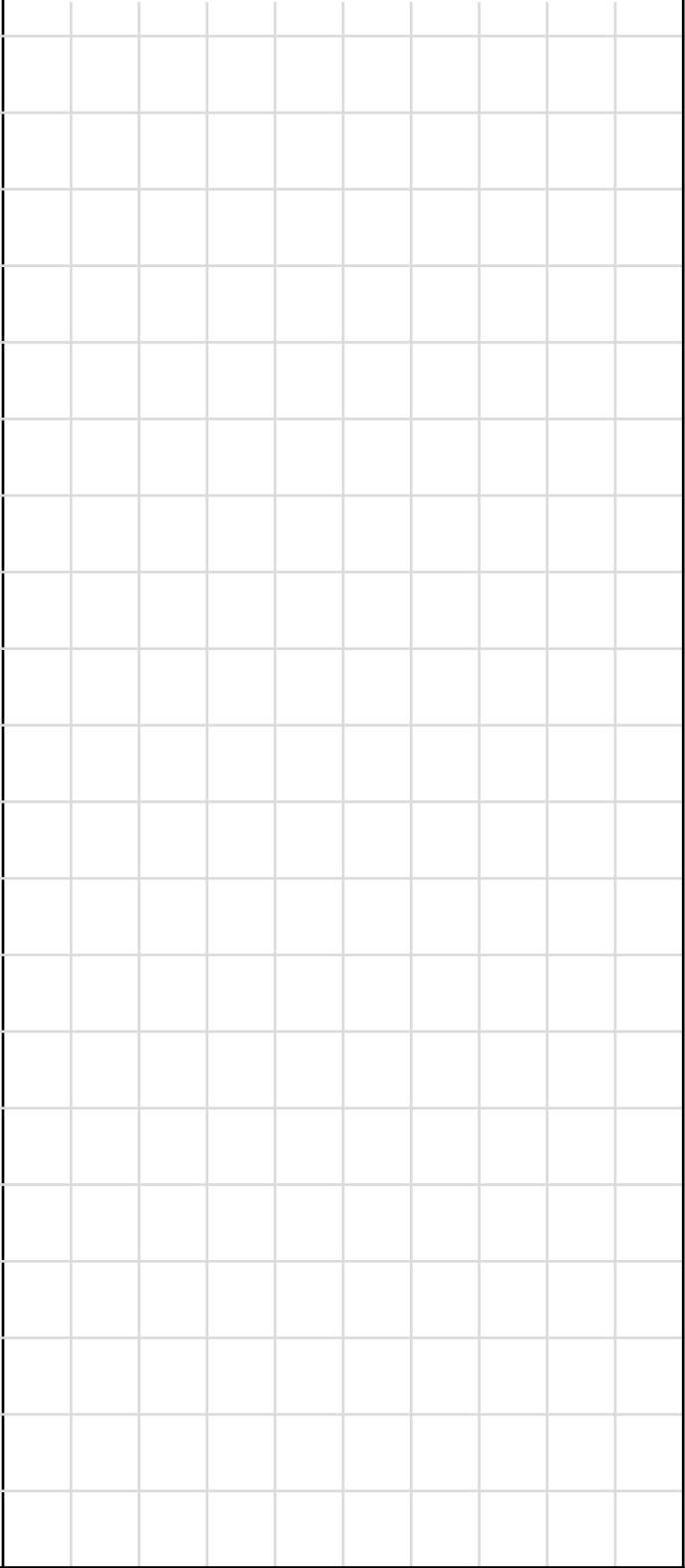
3.3 Forming Expressions

Forming Expressions

Form the following expressions starting from x :

$4x - 5$	
$5 - 4x$	
$\frac{x}{4} - 5$	
$\frac{x - 5}{4}$	
$4(x - 5)$	

3.4 Two Steps

Worked Example	Your Turn
Solve the following equations: a) $17 - 4x = 43$ b) $-17 - 4x = 43$ 	Solve the following equations: a) $27 - 6x = 53$ b) $-27 - 6x = 53$ 

3.5 Fractions

