8th Basic

9th Advanced

# Helping With Math

USA GRADES

## Addition of RAEs with Different Denominators

*Suitable for students*
**aged 12-14**

This pack is suitable for learners aged 12-14 years old or 8th and 9th graders (USA). The content covers fact files and relevant basic and advanced activities involving addition of rational algebraic expressions with different denominators.

Hi! I am Dennis! Before I go for a vacation, I will teach you first the steps on how to add rational algebraic expressions with different denominators.

What is a ***rational algebraic expression***?

- Rational algebraic expression is a fraction whose numerator and/or denominator contain a polynomial.

**Example:**

$$\frac{(4x + 3)}{(2x + 3)}$$

$$\frac{(x + 23)}{(5x + 2)}$$

$$\frac{(3x + 4)}{(x + 6)}$$

# STEPS ON HOW TO ADD RATIONAL ALGEBRAIC EXPRESSIONS WITH DIFFERENT DENOMINATORS

Let's Try This!

$$\frac{5}{(x+2)} + \frac{(x+6)}{(2x+3)}$$

## STEP 1

Check if the denominators are not the same.

$$\frac{5}{(x+2)} + \frac{(x+6)}{(2x+3)}$$

## STEP 2

Factor the denominator completely. If it is already factored out, proceed with the 3rd step.

## STEP 3

Find the LCD or the Least Common Denominator.

$(x + 2)$ : $(x + 2)$

$(2x + 3)$ : $(2x + 3)$

LCD: $\mathbf{(x + 2)(2x + 3)}$

## STEP 4

Rewrite each rational expression as an equivalent rational expression with the LCD.

$$\frac{5(2x+3)}{(x+2)(2x+3)} + \frac{(x+6)(x+2)}{(2x+3)(x+2)}$$

## STEP 5

Add the rational expressions.

$$\frac{10x+15}{(x+2)(2x+3)} + \frac{x^2+8x+12}{(2x+3)(x+2)}$$

$$= \mathbf{\frac{x^2+18x+27}{(2x+3)(x+2)}}$$

## STEP 6

Simplify the answer if necessary.

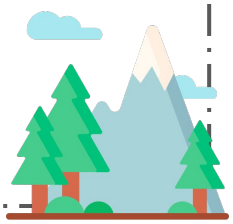
$$\mathbf{\frac{x^2+18x+27}{(2x+3)(x+2)}}$$

Since $x^2+18x+27$ cannot be factored, the answer is simplified.

## LET'S PRACTICE!

**1**

$$\frac{(2x + 23)}{(2x + 23)} + \frac{(2x + 23)}{(2x + 23)}$$



**2**

$$\frac{(2x + 23)}{(2x + 23)} + \frac{(2x + 23)}{(2x + 23)}$$

**3**

$$\frac{(2x + 23)}{(2x + 23)} + \frac{(2x + 23)}{(2x + 23)}$$

**4**

$$\frac{(2x + 23)}{(2x + 23)} + \frac{(2x + 23)}{(2x + 23)}$$

# TABLE OF ACTIVITIES

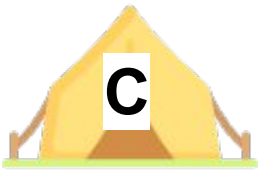
| | |
|---|---|
| **Ages 12-13** (Basic) | 8th Grade |
| 1 | Camping Tent |
| 2 | Games at the Beach |
| 3 | Free Plane Ticket |
| 4 | Maldives Vacation |
| 5 | Food for Vacation |
| **Ages 13-14** (Advanced) | 9th Grade |
| 6 | Farm Tour |
| 7 | Island Hopping |
| 8 | Extra Luggages |
| 9 | VIP Plane Seat for You |
| 10 | Hiking Activity |

# CAMPING TENT

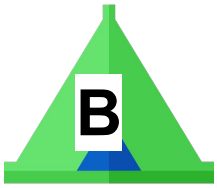
G8 Basic

**Help Suzy choose what tent to buy for her camping activity with her friends. Answer the following and choose the letter of your answer from the choices. Write your answers in the circle and show your solution on the space provided.**


$$\frac{78x + 144}{(2x+8)(6x+10)}$$




$$\frac{208 + 80x}{(7+x)(5+3x)}$$




$$\frac{59x + 127}{(x+11)(8+6x)}$$


$$\frac{40x + 28}{(4x+5)(3x+1)}$$

**1**

$$\frac{8}{4x + 5} + \frac{4}{3x + 1}$$

**2**

$$\frac{5}{8 + 6x} + \frac{9}{x + 11}$$

**3**

$$\frac{12}{2x + 8} + \frac{3}{6x + 10}$$

**4**

$$\frac{22}{7 + x} + \frac{14}{5 + 3x}$$

# GAMES AT THE BEACH

G8
Basic

**You and your friends are having "True or False" games at the beach. For you to win the game, answer the following and state whether the given answer is correct or not. Write "TRUE" in the box if the answer is correct, otherwise write "FALSE".**

**1**

$$\frac{4}{x+3} + \frac{11}{6x}$$

$$\frac{44x+32}{(x+3)(6x)}$$

**2**

$$\frac{12}{5+x} + \frac{3x-2}{x+3}$$

$$\frac{3x^2+25x+26}{(5+x)\ (x+3)}$$

**3**

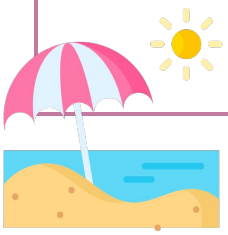
$$\frac{x-2}{x+3} + \frac{3+x}{2x+1}$$

$$\frac{3x^2+3x+7}{(x+3)(2x+1)}$$

**4**

$$\frac{3x+2}{2x-1} + \frac{4}{2x+6}$$

$$\frac{3x^2+20x+8}{(2x-1)(2x+6}$$



# FREE PLANE TICKET

G8
Basic

**You will be given a free plane ticket if you managed to add the following algebraic expressions. Write the letter of your answer inside the circle. Show your solution on the space provided.**

**1.)** $\dfrac{15}{x + 12} + \dfrac{3x}{2x + 4}$

**2.)** $\dfrac{8 + x}{4x - 2} + \dfrac{3 + x}{6x + 5}$

**3.)** $\dfrac{21}{4 + 6x} + \dfrac{3 + 6x}{5 - x}$

**4.)** $\dfrac{4x - 2}{x + 7} + \dfrac{3x + 1}{4x + 2}$

**a** $\dfrac{36x^2+21x153}{(4+6x)(5-x)}$

**b** $\dfrac{19x^2+22x+3}{(x+7)(4x+2)}$

**c** $\dfrac{3x^2+66x+60}{(x+12)(2x+4)}$

**d** $\dfrac{10x^2+63x+34}{(4x-2)(6x+5)}$

# MALDIVES VACATION

G8
Basic

**Help Jim choose his beach outfits for his upcoming Maldives vacation. Help him by answering the following problems. Show your solution on the space provided.**

1

$$\frac{4x}{2x + 12} + \frac{8 + x}{6x + 1}$$

2

$$\frac{3x}{8 + 2x} + \frac{14}{x - 16}$$

3

$$\frac{3 - 2x}{4x - 2} + \frac{3x}{7x + 5}$$

4

$$\frac{x - 2}{6 + 2x} + \frac{3x}{4 + x}$$

5

$$\frac{8}{3x - 1} + \frac{5x}{7 + 2x}$$

# FOODS FOR VACATION

G8
Basic

**Anna wants to prepare some foods for their family vacation. Help her decide what foods should she prepare by answering the following problems. Show your solution on the space provided.**

**1.)**

$$\frac{7x - 1}{4x + 1} + \frac{6 + x}{2x - 2}$$

**2.)**

$$\frac{14}{4x + 1} + \frac{2x + 1}{x + 3}$$

**3.)**

$$\frac{x - 1}{9 - x} + \frac{x + 4}{3x + 4}$$

**4.)**

$$\frac{12 - 2x}{3x + 6} + \frac{x + 3}{x + 2}$$

# FARM TOUR

G9 Advanced

**Anna will go to the farm where her family's having a farm tour. Help her find her way to the farm by adding the following algebraic expressions. Show your solution on the space provided.**

**1** $\frac{x + 3}{8x - 3} + \frac{6x + 5}{x - 6}$

**2** $\frac{14 + 2x}{2x - 7} + \frac{24 + x}{3x + 1}$

**3** $\frac{5x + 2}{6x + 1} + \frac{6x + 7}{8x + 4}$

**4** $\frac{3x - 12}{7x + 1} + \frac{4x + 2}{12 + x}$

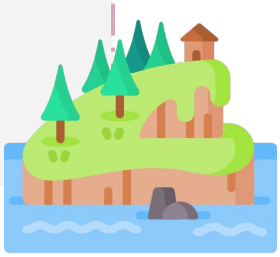
# ISLAND HOPPING

G9 Advanced

**You will be able to use the boat for island hopping if you managed to answer the following problems. Show your solution on the space provided.**

1

$$\frac{2x + 3}{7 - x} + \frac{3x - 1}{2x}$$



2

$$\frac{6x - 7}{9x + 2} + \frac{x + 18}{x - 3}$$

3

$$\frac{2x}{6x + 1} + \frac{3x + 2}{3x}$$

# EXTRA LUGGAGES

G9 Advanced

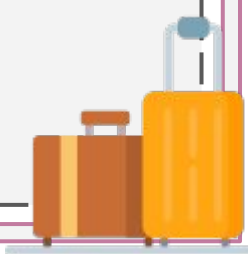
**You will be allowed to have extra luggages in the plane if you answer the following correctly. Add the given algebraic expressions and show your answers on the space provided.**

**1**

$$\frac{7x - 5}{11x - 1} + \frac{12x}{x + 9}$$

**2**

$$\frac{3x}{4x + 2} + \frac{7x + 5}{6 - 2x}$$



**3**

$$\frac{5x}{4x + 10} + \frac{22}{3x - 12}$$

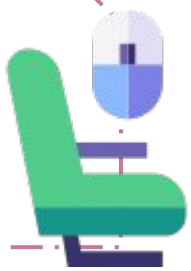
# VIP PLANE SEAT FOR YOU

G9 Advanced

**Oh no! It seems that there is no available seats at the plane for you. The flight attendant will give you a VIP seat if you answer the following correctly. Think of a rational algebraic expression to be added in the given expression that will make the equation correct. Show your solution on the space provided.**

**1.)** $\frac{(x + 4)}{(2x + 1)} + ? = \frac{7x^2+14x+14}{(2x+1)(x+3)}$

Solution:



**2.)** $\frac{(5 + 2x)}{(3x + 4)} + ? = \frac{7x^2+33x+37}{(3x+4)(2x+5)}$

Solution:

**3.)** $\frac{(4x + 1)}{(2 + x)} + ? = \frac{10x^2+37x+20}{(2+x)(6+2x)}$

Solution:

# HIKING ACTIVITY

G9 Advanced

**You will be allowed to join a hiking activity if you managed to answer the following word problems correctly. show your solution on the space provided.**

**1** On Friday, Jack climbed a mountain for $\frac{(4x + 4)}{(x + 2)}$ hrs.

On Sunday, he climbed another mountain for $\frac{(x + 1)}{(2x + 1)}$ hrs.

In terms of x, how many hours did he climb two mountains?

**3** Sarah hiked a $\frac{(2x + 2)}{(3x + 2)}$ kilometer Mountain in December. If she will climb a mountain with $\frac{(3x + 1)}{(x + 5)}$ kilometer high, in terms of x how many kilometer will she hike in 2 months?

# ANSWER GUIDE

## Activity 1

1.) $\frac{8}{4x+5} + \frac{4}{3x+1}$

$\left(\frac{8}{4x+5} \times \frac{3x+1}{3x+1}\right) + \left(\frac{4}{3x+1} \times \frac{4x+5}{4x+5}\right)$

$\frac{24x + 8}{(4x+5)(3x+1)} + \frac{16x + 20}{(4x+5)(3x+1)}$

$\mathbf{\frac{40x + 28}{(4x+5)(3x+1)}}$ **D**

2.) $\frac{5}{8+6x} + \frac{9}{x+11}$

$\left(\frac{5}{8+6x} \times \frac{x+11}{x+11}\right) + \left(\frac{9}{x+11} \times \frac{8+6x}{8+6x}\right)$

$\frac{5x + 55}{(x+11)(8+6x)} + \frac{72+ 54x}{(x+11)(8+6x)}$

$\mathbf{\frac{59x + 127}{(x+11)(8+6x)}}$ **B**

3.) $\frac{12}{2x+8} + \frac{3}{6x+10}$

$\left(\frac{12}{2x+8} \times \frac{6x+10}{6x+10}\right) + \left(\frac{3}{6x+10} \times \frac{2x+8}{2x+8}\right)$

$\frac{72x + 120}{(2x+8)(6x+10)} + \frac{6x + 24}{(2x+8)(6x+10)}$

$\mathbf{\frac{78x + 144}{(2x+8)(6x+10)}}$ **A**

4.) $\frac{22}{7+x} + \frac{14}{5+3x}$

$\left(\frac{22}{7+x} \times \frac{5+3x}{5+3x}\right) + \left(\frac{14}{5+3x} \times \frac{7+x}{7+x}\right)$

$\frac{110 + 66x}{(7+x)(5+3x)} + \frac{98 + 14x}{(7+x)(5+3x)}$

$\mathbf{\frac{208 + 80x}{(7+x)(5+3x)}}$ **C**

## Activity 2

1.) $\frac{4}{x+3} + \frac{11}{6x}$

$\left(\frac{4}{x + 3} \times \frac{6x}{6x}\right) + \left(\frac{11}{6x} \times \frac{x + 3}{x + 3}\right)$

$\frac{24x}{(x+3)(6x)} + \frac{11x+33}{(x+3)(6x)}$

$\mathbf{\frac{35x+33}{(x+3)(6x)}}$ **FALSE**

2.) $\frac{12}{5+x} + \frac{3x-2}{x+3}$

$\left(\frac{12}{5+x} \times \frac{x+3}{x+3}\right) + \left(\frac{3x-2}{x+3} \times \frac{5+x}{5+x}\right)$

$\frac{12x + 36}{(5+x)(x+3)} + \frac{3x^2+13x-10}{(5+x)(x+3)}$

$\mathbf{\frac{3x^2+25x+26}{(5+x)(x+3)}}$ **TRUE**

# ANSWER GUIDE

3.) $\frac{x-2}{x+3}+\frac{3+x}{2x+1}$

$\left(\frac{x-2}{x+3}\times\frac{2x+1}{2x+1}\right)+\left(\frac{3+x}{2x+1}\times\frac{x+3}{x+3}\right)$

$\frac{2x^2-3x-2}{(x+3)(2x+1)}+\frac{x^2+6x+9}{(x+3)(2x+1)}$

$\mathbf{\frac{3x^2+3x+7}{(x+3)(2x+1)}}$ **TRUE**

4.) $\frac{3x+2}{2x-1}+\frac{4}{2x+6}$

$\left(\frac{3x+2}{2x-1}\times\frac{2x+6}{2x+6}\right)+\left(\frac{4}{2x+6}\times\frac{2x-1}{2x-1}\right)$

$\frac{6x^2+22x+12}{(2x-1)(2x+6)}+\frac{8x-4}{(2x-1)(2x+6)}$

$\mathbf{\frac{6x^2+30x+8}{(2x-1)(2x+6}}$ **FALSE**

## Activity 3

1.) $\frac{15}{x+12}+\frac{3x}{2x+4}$

$\left(\frac{15}{x+12}\times\frac{2x+4}{2x+4}\right)+\left(\frac{3x}{2x+4}\times\frac{x+12}{x+12}\right)$

$\frac{30x+60}{(x+12)(2x+4)}+\frac{3x^2+36x}{(x+12)(2x+4)}$

$\mathbf{\frac{3x^2+66x+60}{(x+12)(2x+4)}}$ **c**

2.) $\frac{8+x}{4x-2}+\frac{3+x}{6x+5}$

$\left(\frac{8+x}{4x-2}\times\frac{6x+5}{6x+5}\right)+\left(\frac{3+x}{6x+5}\times\frac{4x-2}{4x-2}\right)$

$\frac{6x^2+53x+40}{(4x-2)(6x+5)}+\frac{4x^2+10x-6}{(4x-2)(6x+5)}$

$\mathbf{\frac{10x^2+63x+34}{(4x-2)(6x+5)}}$ **d**

3.) $\frac{21}{4+6x}+\frac{3+6x}{5-x}$

$\left(\frac{21}{4+6x}\times\frac{5-x}{5-x}\right)+\left(\frac{3+6x}{5-x}\times\frac{4+6x}{4+6x}\right)$

$\frac{105-21x}{(4+6x)(5-x)}+\frac{36x^2+42x+48}{(4+6x)(5-x)}$

$\mathbf{\frac{36x^2+21x153}{(4+6x)(5-x)}}$ **a**

4.) $\frac{4x-2}{x+7}+\frac{3x+1}{4x+2}$

$\left(\frac{4x-2}{x+7}\times\frac{4x+2}{4x+2}\right)+\left(\frac{3x+1}{4x+2}\times\frac{x+7}{x+7}\right)$

$\frac{16x^2-4}{(x+7)(4x+2)}+\frac{3x^2+22x+7}{(x+7)(4x+2)}$

$\mathbf{\frac{19x^2+22x+3}{(x+7)(4x+2)}}$ **b**

# ANSWER GUIDE

## Activity 4

1.) $\frac{4x}{2x+12}+\frac{8+x}{6x+1}$

$\left(\frac{4x}{2x+12}\times\frac{6x+1}{6x+1}\right)+\left(\frac{8+x}{6x+1}\times\frac{2x+12}{2x+12}\right)$

$\frac{24x^2+4x}{(2x+12)(6x+1)}+\frac{2x^2+28x+96}{(2x+12)(6x+1)}$

$\mathbf{\frac{26x^2+32x+96}{(2x+12)(6x+1)}}$

2.) $\frac{3x}{8+2x}+\frac{14}{x-16}$

$\left(\frac{3x}{8+2x}\times\frac{x-16}{x-16}\right)+\left(\frac{14}{x-16}\times\frac{8+2x}{8+2x}\right)$

$\frac{3x^2-48}{(8+2x)\ (x-16)}+\frac{112+28x}{(8+2x)\ (x-16)}$

$\mathbf{\frac{3x^2+28x+64}{(8+2x)\ (x-16)}}$

3.) $\frac{3-2x}{4x-2}+\frac{3x}{7x+5}$

$\left(\frac{3-2x}{4x-2}\times\frac{7x+5}{7x+5}\right)+\left(\frac{3x}{7x+5}\times\frac{4x-2}{4x-2}\right)$

$\frac{-14x^2+11x+15}{(4x-2)(7x+5)}+\frac{12x^2-6x}{(4x-2)(7x+5)}$

$\mathbf{\frac{-2x^2+5x+15}{(4x-2)(7x+5)}}$

4.) $\frac{x-2}{6+2x}+\frac{3x}{4+x}$

$\left(\frac{x-2}{6+2x}\times\frac{4+x}{4+x}\right)+\left(\frac{3x}{4+x}\times\frac{6+2x}{6+2x}\right)$

$\frac{x^2+2x-8}{(6+2x)\ (4+x)}+\frac{18x+6x^2}{(6+2x)\ (4+x)}$

$\mathbf{\frac{7x^2+20x-8}{(6+2x)\ (4+x)}}$

5.) $\frac{8}{3x-1}+\frac{5x}{7+2x}$

$\left(\frac{8}{3x-1}\times\frac{7+2x}{7+2x}\right)+\left(\frac{5x}{7+2x}\times\frac{3x-1}{3x-1}\right)$

$\frac{56+16x}{(3x-1)\ (7+2x)}+\frac{15x^2-5x}{(3x-1)\ (7+2x)}$

$\mathbf{\frac{15x^2+11x+56}{(3x-1)\ (7+2x)}}$

# ANSWER GUIDE

## Activity 5

1.) $\frac{7x-1}{4x+1} + \frac{6+x}{2x-2}$

$\left(\frac{7x-1}{4x+1} \times \frac{2x-2}{2x-2}\right) + \left(\frac{6+x}{3x+1} \times \frac{4x+1}{4x+1}\right)$

$\frac{14x^2-16x+2}{(4x+1)(2x-2)} + \frac{4x^2+25x+6}{(4x+1)(2x-2)}$

$\mathbf{\frac{18x^2+9x+8}{(4x+1)(2x-2)}}$

2.) $\frac{14}{4x+1} + \frac{2x+1}{x+3}$

$\left(\frac{14}{4x+1} \times \frac{x+3}{x+3}\right) + \left(\frac{2x+1}{x+3} \times \frac{4x+1}{4x+1}\right)$

$\frac{14x+42}{(4x+1)\ (x+3)} + \frac{8x^2+6x+1}{(4x+1)\ (x+3)}$

$\mathbf{\frac{8x^2+20x+43}{(4x+1)\ (x+3)}}$

3.) $\frac{x-1}{9-x} + \frac{x+4}{3x+4}$

$\left(\frac{x-1}{9-x} \times \frac{x+4}{3x+4}\right) + \left(\frac{x+4}{3x+4} \times \frac{9-x}{9-x}\right)$

$\frac{2x^2+3x-4}{(9-x)(3x+4)} + \frac{-2x^2+5x+36}{(9-x)(3x+4)}$

$\mathbf{\frac{8x+32}{(4x+1)\ (x+3)}}$

4.) $\frac{12-2x}{3x+6} + \frac{x+3}{x+2}$

$\left(\frac{12-2x}{3x+6} \times \frac{x+2}{x+2}\right) + \left(\frac{x+3}{x+2} \times \frac{3x+6}{3x+6}\right)$

$\frac{-2x^2+8x+24}{(3x+6)(x+2)} + \frac{3x^2+15x+18}{(3x+6)(x+2)}$

$\mathbf{\frac{x^2+23x+42}{(3x+6)\ (x+2)}}$

# ANSWER GUIDE

## Activity 6

1.) $\frac{x+3}{8x-3}+\frac{6x+5}{x-6}$

$\left(\frac{x+3}{8x-3}\times\frac{x-6}{x-6}\right)+\left(\frac{6x+5}{x-6}\times\frac{8x-3}{8x-3}\right)$

$\frac{x^2-3x-18}{(8x-3)(x-6)}+\frac{48x^2+22x-15}{(8x-3)(x-6)}$

$\mathbf{\frac{49x^2+19x-33}{(8x-3)(x-6)}}$

2.) $\frac{14+2x}{2x-7}+\frac{24+x}{3x+1}$

$\left(\frac{14+2x}{2x-7}\times\frac{3x+1}{3x+1}\right)+\left(\frac{24+x}{3x+1}\times\frac{2x-7}{2x-7}\right)$

$\frac{6x^2+44x+14}{(2x-7)(3x+1)}+\frac{2x^2+21x-168}{(2x-7)(3x+1)}$

$\mathbf{\frac{8x^2+65x-154}{(2x-7)(3x+1)}}$

3.) $\frac{5x+2}{6x+1}+\frac{6x+7}{8x+4}$

$\left(\frac{5x+2}{6x+1}\times\frac{8x+4}{8x+4}\right)+\left(\frac{6x+7}{8x+4}\times\frac{6x+1}{6x+1}\right)$

$\frac{40x^2+36x+8}{(6x+1)(8x+4)}+\frac{36x^2+48x+7}{(6x+1)(8x+4)}$

$\mathbf{\frac{76x^2+84x+15}{(6x+1)(8x+4)}}$

4.) $\frac{3x-12}{7x+1}+\frac{4x+2}{12+x}$

$\left(\frac{3x-12}{7x+1}\times\frac{12+x}{12+x}\right)+\left(\frac{4x+2}{12+x}\times\frac{7x+1}{7x+1}\right)$

$\frac{3x^2+24x-144}{(7x+1)(12+x)}+\frac{28x^2+18x+2}{(7x+1)(12+x)}$

$\mathbf{\frac{31x^2+42x-142}{(7x+1)(12+x)}}$

## Activity 7

1.) $\frac{2x+3}{7-x}+\frac{3x-1}{2x}$

$\left(\frac{2x+3}{7-x}\times\frac{2x}{2x}\right)+\left(\frac{3x-1}{2x}\times\frac{7-x}{7-x}\right)$

$\frac{4x^2+6x}{(7-x)(2x)}+\frac{-3x^2+22x-7}{(7-x)(2x)}$

$\frac{x^2+28x-7}{(7-x)(2x)}$

2.) $\frac{6x-7}{9x+2}+\frac{x+18}{x-3}$

$\left(\frac{6x-7}{9x+2}\times\frac{x-3}{x-3}\right)+\left(\frac{x+18}{x-3}\times\frac{9x+2}{9x+2}\right)$

$\frac{6x^2+11x+21}{(2x-7)(3x+1)}+\frac{9x^2+164x+36}{(2x-7)(3x+1)}$

$\frac{15x^2+175x+57}{(2x-7)(3x+1)}$

# ANSWER GUIDE

3.) $\frac{2x}{6x+1} + \frac{3x+2}{3x}$

$$\left(\frac{2x}{6x+1} \times \frac{3x}{3x}\right) + \left(\frac{3x+2}{3x} \times \frac{6x+1}{6x+1}\right)$$

$$\frac{6x^2}{(6x+1)(3x)} + \frac{18x^2+15x+2}{(6x+1)(3x)}$$

$$\mathbf{\frac{24x^2+15x+2}{(6x+1)(3x)}}$$

## Activity 8

1.) $\frac{7x-5}{11x-1} + \frac{12x}{x+9}$

$$\left(\frac{7x-5}{11x-1} \times \frac{x+9}{x+9}\right) + \left(\frac{12x}{x+9} \times \frac{11x-1}{11x-1}\right)$$

$$\frac{7x^2+51x-45}{(11x-1)(x+9)} + \frac{132x^2-12x}{(11x-1)(x+9)}$$

$$\mathbf{\frac{139x^2+39x-45}{(11x-1)(x+9)}}$$

2.) $\frac{3x}{4x+2} + \frac{7x+5}{6-2x}$

$$\left(\frac{3x}{4x+2} \times \frac{6-2x}{6-2x}\right) + \left(\frac{7x+5}{6-2x} \times \frac{4x+2}{4x+2}\right)$$

$$\frac{6x^2+18x}{(4x+2)(6-2x)} + \frac{28x^2+34x+10}{(4x+2)(6-2x)}$$

$$\mathbf{\frac{34x^2+52x+10}{(4x+2)(6-2x)}}$$

3.) $\frac{5x}{4x+10} + \frac{22}{3x-12}$

$$\left(\frac{5x}{4x+10} \times \frac{3x-12}{3x-12}\right) + \left(\frac{22}{3x-12} \times \frac{4x+10}{4x+10}\right)$$

$$\frac{15x^2-60x}{(4x+10)(3x-12)} + \frac{88x+220}{(4x+10)(3x-12)}$$

$$\mathbf{\frac{15x^2+28x+220}{(4x+10)(3x-12)}}$$

# ANSWER GUIDE

## Activity 9

1.) $\frac{x+4}{2x+1} + \mathbf{\frac{3x+2}{x+3}}$

$$\left(\frac{x+4}{2x+1} \times \frac{x+3}{x+3}\right) + \left(\frac{3x+2}{x+3} \times \frac{2x+1}{2x+1}\right)$$

$$\frac{x^2+7x+12}{(2x+1)(x+3)} + \frac{6x^2+7x+2}{(2x+1)(x+3)}$$

$$\frac{7x^2+14x+14}{(2x+1)(x+3)}$$

2.) $\frac{5+2x}{3x+4} + \mathbf{\frac{3+x}{2x+5}}$

$$\left(\frac{5+2x}{3x+4} \times \frac{2x+5}{2x+5}\right) + \left(\frac{3+x}{2x+5} \times \frac{3x+4}{3x+4}\right)$$

$$\frac{4x^2+20x+25}{(3x+4)(2x+5)} + \frac{3x^2+13x+12}{(3x+4)(2x+5)}$$

$$\frac{7x^2+33x+37}{(3x+4)(2x+5)}$$

3.) $\frac{4x+1}{2+x} + \mathbf{\frac{2x+7}{6+2x}}$

$$\left(\frac{4x+1}{2+x} \times \frac{6+2x}{6+2x}\right) + \left(\frac{2x+7}{6+2x} \times \frac{2+x}{2+x}\right)$$

$$\frac{8x^2+26x+6}{(2+x)(6+2x)} + \frac{2x^2+11x+14}{(2+x)(6+2x)}$$

$$\frac{10x^2+37x+20}{(2+x)(6+2x)}$$

## Activity 10

1.) $\frac{4x+4}{x+2} + \frac{x+1}{2x+1}$

$$\left(\frac{4x+4}{x+2} \times \frac{2x+1}{2x+1}\right) + \left(\frac{x+1}{2x+1} \times \frac{x+2}{x+2}\right)$$

$$\frac{8x^2+12x+4}{(x+2)(2x+1)} + \frac{x^2+3x+2}{(x+2)(2x+1)}$$

$$\mathbf{\frac{9x^2+15x+6}{(x+2)(2x+1)}} \text{ hours}$$

2.) $\frac{2x+2}{3x+2} + \frac{3x+1}{x+5}$

$$\left(\frac{2x+2}{3x+2} \times \frac{x+5}{x+5}\right) + \left(\frac{3x+1}{x+5} \times \frac{3x+2}{3x+2}\right)$$

$$\frac{2x^2+12x+10}{(3x+2)(x+5)} + \frac{9x^2+9x+2}{(3x+2)(x+5)}$$

$$\mathbf{\frac{11x^2+21x+12}{(3x+2)(x+5)}} \text{ kilometer}$$

# Copyright Notice



Thank you!

# Thank you

Thank you so much for purchasing and downloading this resource.

We hope it has been useful for you in the classroom and that your students enjoy the activities.

For more teaching and homeschooling resources like this, don't forget to come back and download the new material we add every week!

Thanks for supporting **Helping With Math**. We can provide teachers with low-cost, high-quality teaching and homeschooling resources because of our loyal subscribers and hope to serve you for many years to come.

- The Entire Helping With Math Team :)