Brilliance Tuition Centre, Redbank Plains

MATHS WORKSHEETS-ALGEBRA- ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION OF ALGEBRAIC FRACTIONS

Simplify the following:

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

2 $\frac{3x}{5} + \frac{4x}{9}$ =

3 $\frac{8y}{3} + \frac{3y}{4}$ =

4 $\frac{2y}{3} + \frac{y}{6}$ =

5 $\frac{5t}{7} + \frac{4t}{9}$ =

6 $\frac{2x^2y^2}{7} + \frac{8x^2y^2}{11}$ =

7 $\frac{11x}{12} + \frac{8x}{15}$ =

8 $\frac{bc}{12} + \frac{bc}{20}$ =

9 $\frac{4b}{7} + \frac{2b}{9}$ =

10 $\frac{x}{8} + \frac{2x}{11}$ =

11 $\frac{4x}{9} + \frac{x}{5}$ =

12 $\frac{7x}{8} + \frac{2x}{6}$ =

13 $\frac{3y}{7} + \frac{y}{4}$ =

14 $\frac{y}{8} + \frac{x}{8}$ =

15 $\frac{6xy}{12} + \frac{4xy}{11}$ =

16 $\frac{x}{5} - \frac{3x}{8}$ =

17 $\frac{3x}{5} - \frac{4x}{9}$ =

18 $\frac{8y}{3} - \frac{3y}{4}$ =

19 $\frac{2y}{3} - \frac{y}{6}$ =

20 $\frac{5t}{7} - \frac{4t}{9}$ =

21 $\frac{2x^2y^2}{7} - \frac{8x^2y^2}{11}$ =

22 $\frac{11x}{12} - \frac{8x}{15}$ =

23 $\frac{bc}{12} - \frac{bc}{20}$ =

24 $\frac{4b}{7} - \frac{2b}{9}$ =

25 $\frac{x}{8} - \frac{2x}{11}$ =

26 $\frac{4x}{9} - \frac{x}{5}$ =

27 $\frac{7x}{8} - \frac{2x}{6}$ =

28 $\frac{3y}{7} - \frac{y}{4}$ =

29 $\frac{y}{8} - \frac{x}{8}$ =

30 $\frac{6xy}{12} - \frac{4xy}{11}$ =

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31 $\frac{x}{5} \times \frac{3x}{8}$ =

32 $\frac{3x}{5} \times \frac{4x}{9}$ =

33 $\frac{8y}{3} \times \frac{3y}{4}$ =

34 $\frac{2y}{3} \times \frac{y}{6}$ =

35 $\frac{5t}{7} \times \frac{4t}{9}$ =

36 $\frac{2x^2y^2}{7} \times \frac{8x^2y^2}{11}$ =

37 $\frac{11x}{12} \times \frac{8x}{15}$ =

38 $\frac{bc}{12} \times \frac{bc}{20}$ =

39 $\frac{4b}{7} \times \frac{2b}{9}$ =

40 $\frac{x}{8} \times \frac{2x}{11}$ =

41 $\frac{4x}{9} \times \frac{x}{5}$ =

42 $\frac{7x}{8} \times \frac{2x}{6}$ =

43 $\frac{3y}{7} \times \frac{y}{4}$ =

44 $\frac{y}{8} \times \frac{x}{8}$ =

45 $\frac{6xy}{12} \times \frac{4xy}{11}$ =

46 $\frac{x}{5} \div \frac{3x}{8}$ =

47 $\frac{3x}{5} \div \frac{4x}{9}$ =

48 $\frac{8y}{3} \div \frac{3y}{4}$ =

49 $\frac{2y}{3} \div \frac{y}{6}$ =

50 $\frac{5t}{7} \div \frac{4t}{9}$ =

51 $\frac{2x^2y^2}{7} \div \frac{8x^2y^2}{11}$ =

52 $\frac{11x}{12} \div \frac{8x}{15}$ =

53 $\frac{bc}{12} \div \frac{bc}{20}$ =

54 $\frac{4b}{7} \div \frac{2b}{9}$ =

55 $\frac{x}{8} \div \frac{2x}{11}$ =

56 $\frac{4x}{9} \div \frac{x}{5}$ =

57 $\frac{7x}{8} \div \frac{2x}{6}$ =

58 $\frac{3y}{7} \div \frac{y}{4}$ =

59 $\frac{y}{8} \div \frac{x}{8}$ =

60 $\frac{6xy}{12} \div \frac{4xy}{11}$ =

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Answer Key:

Addition and Subtraction of Algebraic Fractions:

$$\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{bd}$$

$$\frac{a}{b}-\frac{c}{d}=\frac{ad-bc}{bd}$$

1. Make the denominator same by multiplying them.
2. Cross multiply the numerator and denominator and write on the numerator side.
3. Add or subtract the numerators.
4. Keep the denominator same.
5. Simplify the fraction (if possible)

$$\frac{1}{5}+\frac{3}{8}=\frac{(1x8)+(5x3)}{5\,x\,8}=\frac{8+15}{40}=\frac{23}{40}$$

$$\frac{1}{5}-\frac{3}{8}=\frac{(1x8)+(5x3)}{5\,x\,8}=\frac{8-15}{40}=\frac{-7}{40}$$

Multiplication of Algebraic Fractions:

$$\frac{a}{b}\ \text{x}\ \frac{c}{d}=\frac{ac}{bd}$$

1. Multiply the numerators
2. Multiply the denominators.
3. Simplify the fraction (if possible)

Eg: $\frac{1}{5}\ \text{X}\ \frac{3}{8}=\frac{1x3}{5x8}=\frac{3}{40}$

Division of Algebraic Fractions:

$$\frac{a}{b}\div\frac{c}{d}=\frac{ad}{bc}$$

1. Write the reciprocal of the second fraction.
2. Multiply the reciprocal with the first fraction.
3. Simplify the fraction (if possible)

Eg: $\frac{1}{5}\div\frac{3}{8}=\frac{1}{5}\times\frac{8}{3}=\frac{8}{15}$

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1 $\frac{23x}{40}$

2 $\frac{47x}{45}$

3 $\frac{41y}{12}$

4 $\frac{5y}{6}$

5 $\frac{73t}{63}$

6 $\frac{78x^2y^2}{77}$

7 $\frac{29x}{20}$

8 $\frac{2bc}{15}$

9 $\frac{50b}{63}$

10 $\frac{27x}{88}$

11 $\frac{29x}{45}$

12 $\frac{29x}{24}$

13 $\frac{19y}{28}$

14 $\frac{y+x}{8}$

15 $\frac{19xy}{22}$

16 $\frac{-7x}{40}$

17 $\frac{7x}{45}$

18 $\frac{23y}{12}$

19 $\frac{y}{2}$

20 $\frac{17t}{63}$

21 $\frac{-34x^2y^2}{77}$

22 $\frac{23x}{60}$

23 $\frac{bc}{30}$

24 $\frac{22b}{63}$

25 $\frac{-5x}{88}$

26 $\frac{11x}{45}$

27 $\frac{13x}{24}$

28 $\frac{5y}{28}$

29 $\frac{y-x}{8}$

30 $\frac{3xy}{22}$

31 $\frac{3x^2}{40}$

32 $\frac{4x^2}{15}$

33 $2y^2$

34 $\frac{y^2}{9}$

35 $\frac{20t^2}{63}$

36 $\frac{16x^4y^4}{77}$

37 $\frac{22x^2}{45}$

38 $\frac{b^2c^2}{240}$

39 $\frac{8b^2}{63}$

40 $\frac{x^2}{44}$

41 $\frac{4x^2}{45}$

42 $\frac{7x^2}{24}$

43 $\frac{3y^2}{28}$

44 $\frac{xy}{64}$

45 $\frac{24x^2y^2}{132}$

46 $\frac{8}{15}$

47 $\frac{27}{20}$

48 $\frac{32}{9}$

49 4

50 $\frac{45}{28}$

51 $\frac{11}{28}$

52 $\frac{55}{32}$

53 $\frac{5}{3}$

54 $\frac{18}{7}$

55 $\frac{11}{16}$

56 $\frac{20}{9}$

57 $\frac{21}{8}$

58 $\frac{12}{7}$

59 $\frac{y}{x}$

60 $\frac{11}{8}$