# FRACT

[FRACTIONS]

Work out the answers to each of these questions.

achildsguideto

Fractions

Shapes as fractions.

For each of the shapes below, write:

a) The fraction of the red part of the shape.   b) The fraction of the blue part of each shape.

1

6

11

2

7

12

3

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5

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15
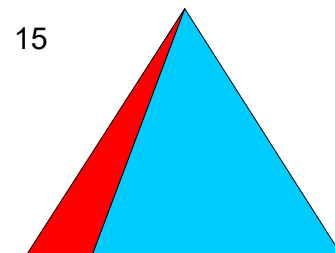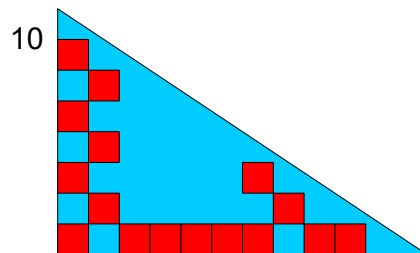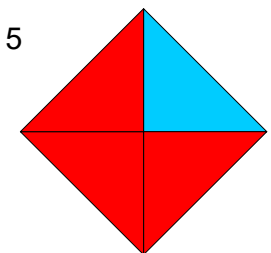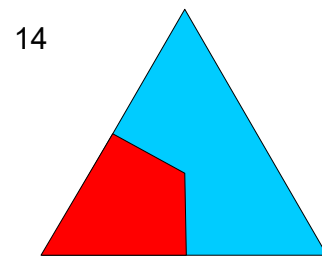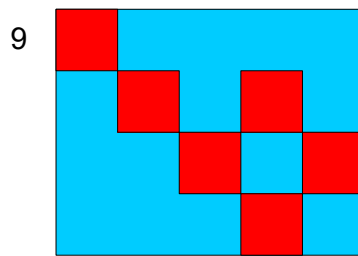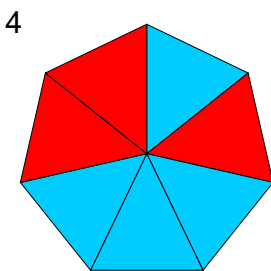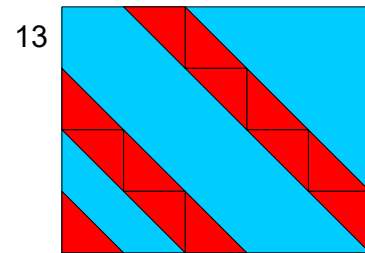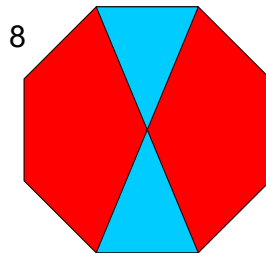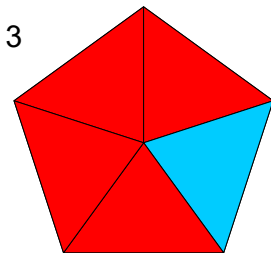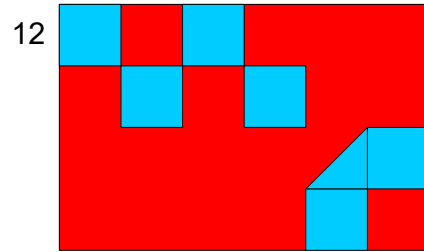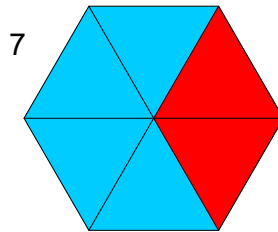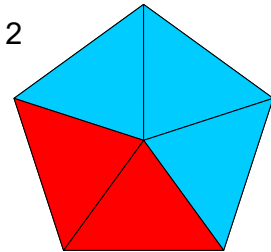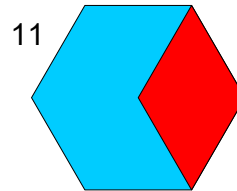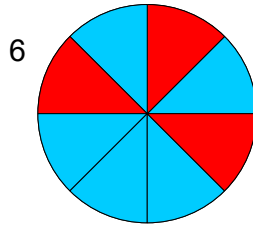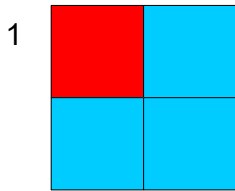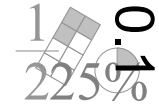
Fractions of a number

Calculate the fractions of these numbers.

1. $\dfrac{5}{6}$ of 170 =

2. $\dfrac{2}{5}$ of 61 =

3. $\dfrac{5}{18}$ of 83 =

4. $\dfrac{2}{15}$ of 84 =

5. $\dfrac{2}{11}$ of 42 =

6. $\dfrac{10}{7}$ of 63 =

7. $\dfrac{5}{20}$ of 148 =

8. $\dfrac{8}{4}$ of 168 =

9. $\dfrac{9}{4}$ of 228 =

10. $\dfrac{6}{12}$ of 112 =

11. $\dfrac{10}{4}$ of 42 =

12. $\dfrac{1}{12}$ of 31 =

13. $\dfrac{2}{7}$ of 49 =

14. $\dfrac{6}{7}$ of 21 =

15. $\dfrac{6}{19}$ of 76 =

16. $\dfrac{6}{18}$ of 129 =

17. $\dfrac{1}{12}$ of 172 =

18. $\dfrac{2}{15}$ of 113 =

19. $\dfrac{2}{15}$ of 225 =

20. $\dfrac{4}{14}$ of 113 =
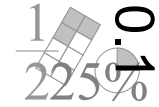
Equivalent Fractions

Simplify the fractions below to make the numbers as small as you possibly can. Remember: do the same to the top as you do to the bottom.

1 $\dfrac{528}{4032}$

2 $\dfrac{240}{4752}$

3 $\dfrac{144}{5904}$

4 $\dfrac{216}{3672}$

5 $\dfrac{408}{5376}$

6 $\dfrac{480}{4080}$

7 $\dfrac{552}{5472}$

8 $\dfrac{288}{2688}$

9 $\dfrac{504}{3960}$

10 $\dfrac{600}{3024}$

Level 3 SATs type Questions

1. Here is part of a number line.

    Write in the missing fraction.
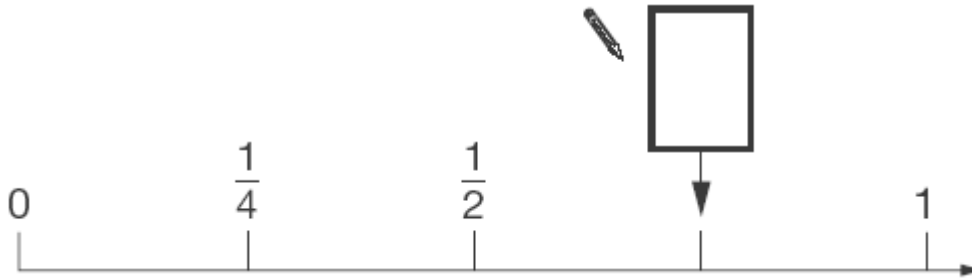
2. Here are three shapes made from regular hexagons.

   Write the **fraction** of each shape that is shaded.

3.   Copy this shape into your book and shade $\frac{1}{4}$ of this it.
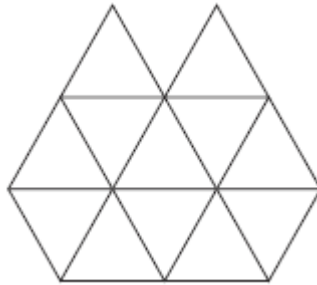
4.   Here are five diagrams.

Copy each one into your book.

Put a tick (✓) on the diagram if exactly $\frac{1}{2}$ of it is shaded.

Put a cross (✗) if it is not.
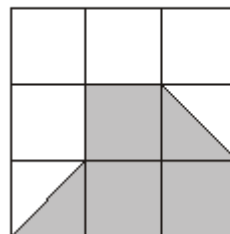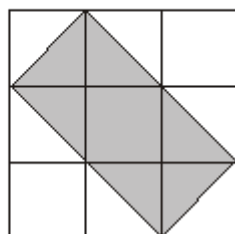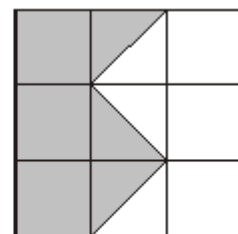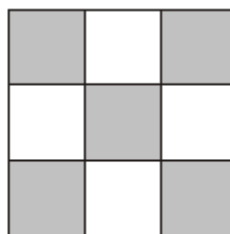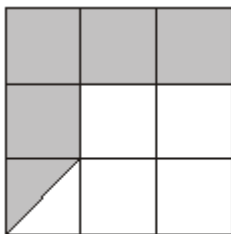
5.   Here is a square.
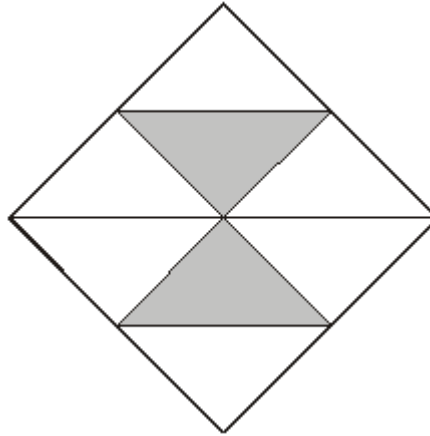
What fraction of the square is shaded?

6.   Write in your book the **two** fractions that are **greater than** $\frac{1}{2}$

$\frac{1}{8}$ $\qquad\qquad$ $\frac{6}{10}$ $\qquad\qquad$ $\frac{5}{8}$ $\qquad\qquad$ $\frac{3}{10}$

7.   Write out the sequence in your book, including the **two** missing numbers.
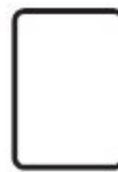
$\frac{1}{4}$ $\qquad$ $\frac{1}{2}$ $\qquad$ $\frac{3}{4}$ $\qquad$ 1 $\qquad$ ☐ $\qquad$ $1\frac{1}{2}$ $\qquad$ ☐ $\qquad$ 2

8. $\frac{3}{8}$ of a class are boys.

What **fraction** of the class are girls?
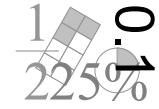
Equivalence between fractions, decimals and percentages

You may use a calculator to help you with this work if you need to.

Fraction	Decimal	Percent	> half ?	Compliment to make a whole one
$\dfrac{1}{2}$				
$\dfrac{1}{10}$				
$\dfrac{3}{4}$				
$\dfrac{3}{5}$				
$\dfrac{7}{10}$				
$\dfrac{1}{4}$				
$\dfrac{1}{5}$				

Ordering fractions, percentages and decimal fractions.

Put these numbers into order. (Hint: begin with fractions and then slot the percentages between where they should go. Finally, slot the decimals where they should go.)

1.

$$72\% \qquad \frac{2}{5} \qquad \frac{1}{4} \qquad 85\% \qquad \frac{4}{5} \qquad \frac{1}{2} \qquad 17\%$$

2.

$$0.75 \qquad \frac{7}{10}$$

$$\frac{2}{10} \qquad \frac{6}{20} \qquad 50\%$$

$$25\% \qquad 0.12 \qquad 0.7$$

3.

$$\frac{1}{4} \qquad 17\% \qquad \frac{1}{2} \qquad 91\% \qquad 0.817 \qquad \frac{3}{10} \qquad 23\%$$

$$\frac{3}{5} \qquad \frac{4}{10} \qquad \frac{9}{20} \qquad 58\% \qquad \frac{3}{20}$$

$$63\% \qquad 0.4201 \qquad 0.612 \qquad 0.9 \qquad 0.12$$

## Level 4 type SATs Questions

1.   Here is a chocolate bar.
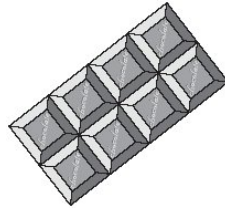
        William eats 3 pieces and Amber eats 2 pieces.

        What **fraction** of the chocolate bar **remains**?

2.   Calculate 35% of 1600.

3.   Calculate 70% of 245.

4.   Calculate 30% of 820.

5.   Write down the fractions with the same value.

$$\frac{4}{7} \qquad \frac{1}{2} \qquad \frac{2}{8} \qquad \frac{2}{5} \qquad \frac{1}{3} \qquad \frac{1}{4}$$
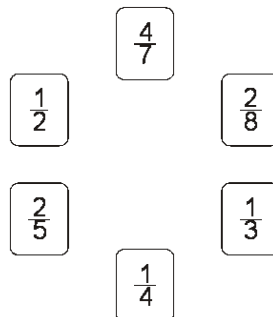
6.   Increase 500ml by 20%.

7.   Increase 300 kg by 50%.

8.   Increase 800 ml by 35% and give your answer in litres.

9.   You need to increase 4 litres of water by 16%. How many ml of water do you have now?

10.   The contents of a shopping basket have a mass of 12kg. You transfer half the mass into a shopping bag. How much does 35% of the mass of the basket now weigh?
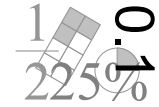
Problems.

1. Alan wants to make some scones. One quarter of his mixture are currents, 20% is flour and the remainder of the ingredients make up the rest. In the oven, the scones lose 5% of their mass.   When they are taken out of the oven, the scones weigh 1kg 250 g. How much did the other ingredients weigh before they were put in the oven?

2. Joel is starting his own business. He is a gardener. He wants to mix a chemical to turn unleaded petrol into 2 stroke for his lawn mower. The mixture is 1:8 of 2 stroke to petrol. He has 4 litres of petrol. How much will he have altogether once he has mixed the 2 stroke fluid into the fuel?

3. Look at the table below. It gives the number of people that attend different schools and the number that stay for dinner and the percentage that stay for dinner. Complete the missing information.

School	Number of Pupils	Number that stay for school dinners	Percentage that stay for school dinners
Midwood Primary	325	218	
St Paul's CE Primary	240		54%
Ellingwood Primary		43	25%
Jones' Beach Primary	415	194	

a) Which school has the greatest percentage of children going home for dinner?

b) Which school has most pupils staying for dinner?

c) What percentage of children stay for dinner at Ellingwood and Jones' Beach combined?

4. A car would cost £4,250 with a reduction of 20%. What is the original price of the car?

5. A loan from a loan company is given with an annual percentage interest rate of 3995%. A customer borrowed £1,000. They paid back the total loan amount after 60 days. What amount was paid to the loan company?

6. A bank charged £35 when one of its customers went overdrawn by £0.17 for one day. What is the equivalent annual rate of interest?

SATs Questions

1. **Add to 8**

    Complete this diagram so that the three numbers in each line **add to 8**
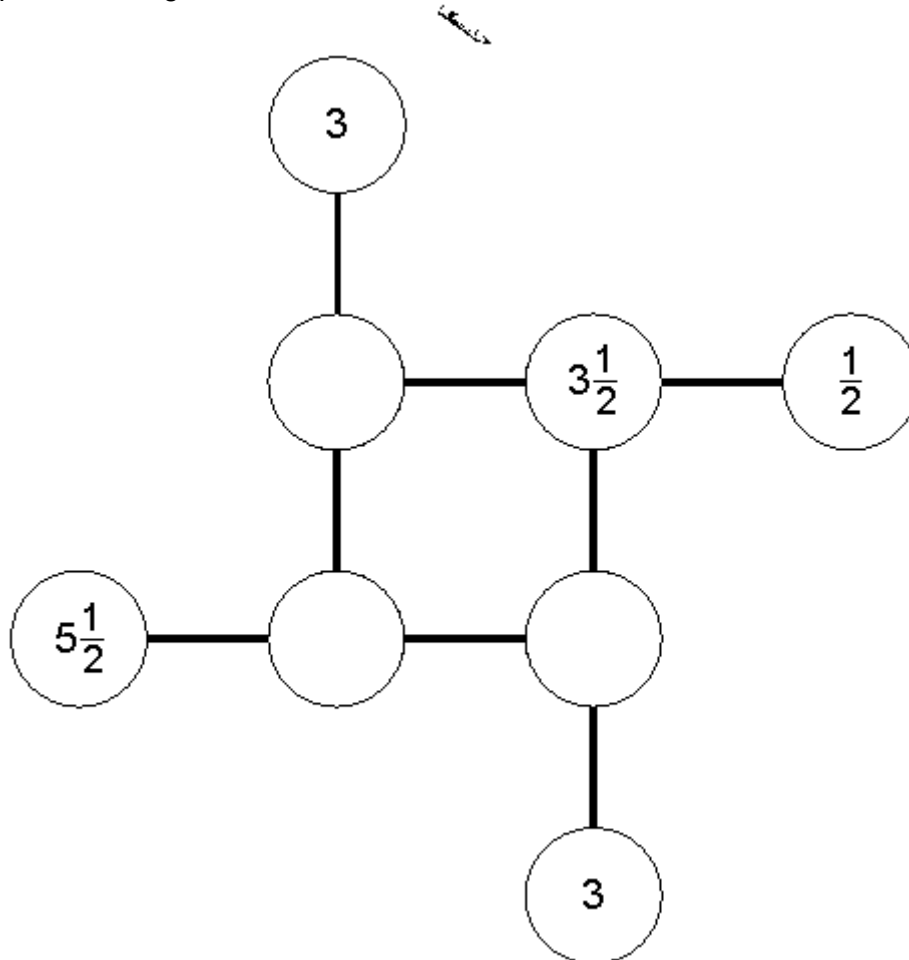
2. **Thinking fractions**

    Calculate $\frac{5}{6} \times \frac{3}{5}$

    Show your working.

    Write your answer as a fraction in its **simplest form**.

3.

Four-fifths of the members of a club are female.

Three-quarters of these females are over 20 years old.

What fraction of the members of the club are females over 20 years old?

4.   Four thousand years ago people thought the value of π was $\left(\frac{16}{9}\right)^2$

Write $\left(\frac{16}{9}\right)^2$ as a decimal correct to **2 decimal places**.

5.   Calculate $\left(\frac{3}{5} \times \frac{4}{9}\right) \div \frac{6}{7} =$

6.   Calculate $\frac{3}{4} + \frac{4}{5} =$

7.   **Adverts**

In a magazine there are three adverts on the same page.

> Advert 1 uses $\frac{1}{4}$ of the page
>
> Advert 2 uses $\frac{1}{8}$ of the page
>
> Advert 3 uses $\frac{1}{16}$ of the page

In total, what **fraction** of the page do the three adverts use?

Division of Fractions

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

1. $\dfrac{8}{32} \div \dfrac{20}{13} =$

2. $\dfrac{19}{40} \div \dfrac{9}{17} =$

3. $\dfrac{20}{34} \div \dfrac{14}{20} =$

4. $\dfrac{15}{25} \div \dfrac{10}{40} =$

5. $\dfrac{17}{36} \div \dfrac{17}{33} =$

6. $\dfrac{15}{17} \div \dfrac{20}{34} =$

7. $\dfrac{9}{26} \div \dfrac{17}{34} =$

8. $\dfrac{15}{23} \div \dfrac{11}{37} =$

9. $\dfrac{8}{19} \div \dfrac{12}{23} =$

10. $\dfrac{11}{33} \div \dfrac{15}{17} =$

11. $\dfrac{20}{37} \div \dfrac{13}{16} =$

12. $\dfrac{8}{30} \div \dfrac{10}{38} =$

13. $\dfrac{18}{24} \div \dfrac{17}{13} =$

14. $\dfrac{10}{37} \div \dfrac{6}{12} =$

15. $\dfrac{12}{35} \div \dfrac{9}{13} =$

16. $\dfrac{10}{27} \div \dfrac{13}{30} =$

17. $\dfrac{9}{20} \div \dfrac{7}{36} =$

18. $\dfrac{15}{14} \div \dfrac{6}{23} =$

19. $\dfrac{11}{26} \div \dfrac{6}{35} =$

20. $\dfrac{9}{29} \div \dfrac{14}{26} =$

Addition and Subtraction of Fractions with the Same Denominator

1 $\dfrac{2}{5} + \dfrac{5}{5} + \dfrac{2}{5} + \dfrac{2}{5} + \dfrac{4}{5} + \dfrac{1}{5} + \dfrac{5}{5} =$

2 $\dfrac{4}{7} + \dfrac{7}{7} + \dfrac{4}{7} + \dfrac{4}{7} + \dfrac{6}{7} + \dfrac{1}{7} + \dfrac{3}{7} =$

3 $\dfrac{6}{8} + \dfrac{4}{8} + \dfrac{8}{8} + \dfrac{7}{8} + \dfrac{6}{8} + \dfrac{1}{8} + \dfrac{6}{8} =$

4 $\dfrac{6}{6} + \dfrac{4}{6} + \dfrac{5}{6} + \dfrac{1}{6} + \dfrac{2}{6} + \dfrac{3}{6} + \dfrac{6}{6} =$

5 $\dfrac{3}{3} + \dfrac{2}{3} + \dfrac{1}{3} + \dfrac{3}{3} + \dfrac{1}{3} + \dfrac{1}{3} + \dfrac{2}{3} =$

6 $\dfrac{5}{5} + \dfrac{2}{5} + \dfrac{4}{5} + \dfrac{5}{5} + \dfrac{2}{5} + \dfrac{1}{5} + \dfrac{5}{5} =$

7 $\dfrac{3}{12} + \dfrac{12}{12} + \dfrac{8}{12} + \dfrac{5}{12} + \dfrac{10}{12} + \dfrac{12}{12} + \dfrac{11}{12} =$

8 $\dfrac{7}{20} + \dfrac{20}{20} + \dfrac{6}{20} + \dfrac{15}{20} + \dfrac{6}{20} + \dfrac{14}{20} + \dfrac{20}{20} =$

9 $\dfrac{7}{9} + \dfrac{7}{9} + \dfrac{5}{9} + \dfrac{6}{9} + \dfrac{5}{9} + \dfrac{6}{9} + \dfrac{4}{9} =$

10 $\dfrac{6}{6} + \dfrac{6}{6} + \dfrac{4}{6} + \dfrac{1}{6} + \dfrac{2}{6} + \dfrac{1}{6} + \dfrac{2}{6} =$

11 $\dfrac{9}{50} + \dfrac{2}{50} + \dfrac{20}{50} + \dfrac{37}{50} + \dfrac{20}{50} + \dfrac{28}{50} + \dfrac{10}{50} =$

Addition and Subtraction of Fractions with Mixed Denominators

1    $\dfrac{3}{30} + \dfrac{15}{21} =$

2    $\dfrac{2}{16} + \dfrac{3}{32} =$

3    $\dfrac{8}{38} + \dfrac{5}{27} =$

4    $\dfrac{5}{8} + \dfrac{12}{14} =$

5    $\dfrac{5}{25} + \dfrac{13}{34} =$

6    $\dfrac{17}{19} + \dfrac{11}{7} =$

7    $\dfrac{11}{29} + \dfrac{15}{30} =$

8    $\dfrac{20}{16} + \dfrac{8}{35} =$

9    $\dfrac{12}{21} + \dfrac{10}{12} =$

10    $\dfrac{6}{15} + \dfrac{20}{18} =$

11    $\dfrac{7}{23} + \dfrac{7}{11} =$

12    $\dfrac{19}{15} + \dfrac{3}{40} =$

13    $\dfrac{7}{40} + \dfrac{19}{28} =$

14    $\dfrac{14}{17} + \dfrac{16}{32} =$

15    $\dfrac{5}{31} + \dfrac{13}{12} =$

16    $\dfrac{17}{6} + \dfrac{7}{28} =$

17    $\dfrac{1}{24} + \dfrac{2}{11} =$

18    $\dfrac{7}{11} + \dfrac{3}{35} =$

19    $\dfrac{16}{28} + \dfrac{19}{19} =$

20    $\dfrac{6}{39} + \dfrac{13}{25} =$

Adding Mixed Numbers with the Same Denominator

Add the whole numbers first then sort out the fractions.

1. $8 \frac{1}{8} + 3 \frac{1}{8} =$

2. $8 \frac{1}{20} + 12 \frac{3}{20} =$

3. $8 \frac{3}{7} + 10 \frac{4}{7} =$

4. $6 \frac{3}{16} + 8 \frac{3}{16} =$

5. $5 \frac{2}{12} + 6 \frac{1}{12} =$

6. $8 \frac{2}{15} + 11 \frac{1}{15} =$

7. $6 \frac{2}{18} + 11 \frac{4}{18} =$

8. $3 \frac{1}{7} + 3 \frac{2}{7} =$

9. $10 \frac{1}{17} + 5 \frac{3}{17} =$

10. $4 \frac{2}{7} + 3 \frac{2}{7} =$

11. $5 \frac{1}{6} + 8 \frac{4}{6} =$

12. $5 \frac{4}{14} + 5 \frac{2}{14} =$

13. $5 \frac{4}{17} + 6 \frac{4}{17} =$

14. $11 \frac{3}{8} + 12 \frac{1}{8} =$

15. $4 \frac{2}{5} + 9 \frac{3}{5} =$

16. $9 \frac{2}{20} + 3 \frac{3}{20} =$

17. $8 \frac{1}{16} + 4 \frac{1}{16} =$

18. $12 \frac{2}{6} + 6 \frac{1}{6} =$

19. $12 \frac{3}{13} + 3 \frac{3}{13} =$

20. $5 \frac{4}{5} + 7 \frac{1}{5} =$

Adding Mixed Numbers with Different Denominators

1. $12 \frac{1}{18} + 9 \frac{1}{12} =$

2. $9 \frac{1}{9} + 12 \frac{2}{8} =$

3. $11 \frac{4}{6} + 11 \frac{1}{19} =$

4. $5 \frac{1}{15} + 11 \frac{4}{19} =$

5. $3 \frac{4}{17} + 7 \frac{3}{7} =$

6. $6 \frac{2}{8} + 12 \frac{3}{5} =$

7. $6 \frac{3}{17} + 11 \frac{4}{5} =$

8. $11 \frac{4}{11} + 7 \frac{1}{17} =$

9. $3 \frac{3}{12} + 8 \frac{4}{18} =$

10. $5 \frac{3}{17} + 3 \frac{3}{12} =$

11. $5 \frac{1}{20} + 8 \frac{2}{8} =$

12. $8 \frac{1}{10} + 8 \frac{2}{14} =$

13. $7 \frac{4}{17} + 12 \frac{3}{7} =$

14. $6 \frac{4}{7} + 11 \frac{3}{6} =$

15. $7 \frac{3}{17} + 9 \frac{4}{13} =$

16. $11 \frac{4}{17} + 12 \frac{1}{11} =$

17. $5 \frac{1}{12} + 3 \frac{2}{5} =$

18. $12 \frac{4}{9} + 7 \frac{2}{14} =$

19. $4 \frac{4}{16} + 10 \frac{3}{20} =$

20. $3 \frac{3}{19} + 7 \frac{1}{6} =$