



MATHEMATICS



N.S. Yr. 5 P.63

Use known facts to calculate mentally

Equipment

Paper, pencil, ruler

MathSphere

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Concepts

In year 5 strategies to calculate from known facts are further developed.

The 12 times table has been popular with parents for many years, but lost a great deal of its importance when 12 pennies in a shilling disappeared! Whilst children are not expected to know off by heart their 12 times table they should be able to calculate it quickly by adding the 10 times table to the 2 times table.

Multiplying by 21 can be calculated mentally by multiplying by 20 and adding the number on to the answer. In a similar way, multiplying by 19 can be calculated mentally by multiplying by 20 and subtracting the number from the answer.

An especially useful part of this module is for children to recognise fractions from multiplication statements such as:

If $12 \times 3 = 36$ then $\frac{1}{12}$ of 36 is 3 and $\frac{1}{3}$ of 36 is 12

Whilst it might seem obvious that four different multiplication or division sums can be made from a set of three numbers such as 12, 10 and 120, it is vital that children recognise this relationship between multiplication and division.

Multiply by 12

Some people (especially those who still use feet and inches!!) think it is important to know how to multiply by 12.
It's easy – just add 10 times the number to 2 times the number.

eg $14 \times 12 = (14 \times 10) + (14 \times 2) = 140 + 28 = 168$

Try these:

1. $13 \times 12 =$ $+$ $=$

2. $17 \times 12 =$ $+$ $=$

3. $23 \times 12 =$ $+$ $=$

4. $31 \times 12 =$ $+$ $=$

5. $24 \times 12 =$ $+$ $=$

6. $33 \times 12 =$ $+$ $=$

7. $16 \times 12 =$ $+$ $=$

8. $42 \times 12 =$ $+$ $=$

Multiply by 12



Some people (especially those who still use feet and inches!!) think it is important to know how to multiply by 12.
It's easy – just add 10 times the number to 2 times the number. Reminds me of the stone age!

eg $14 \times 12 = (14 \times 10) + (14 \times 2) = 140 + 28 = 168$

Try these:

1. $15 \times 12 =$ $+$ $=$

2. $12 \times 12 =$ $+$ $=$

3. $25 \times 12 =$ $+$ $=$

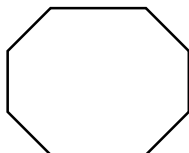
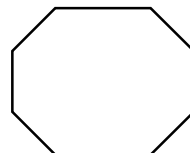
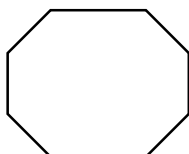
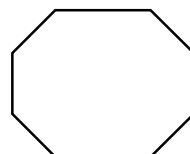
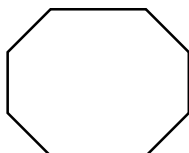
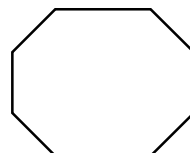
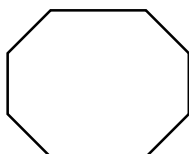
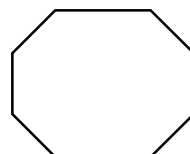
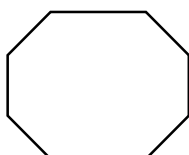
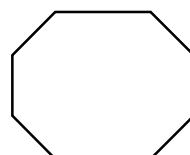
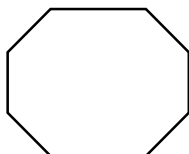
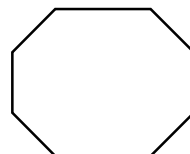
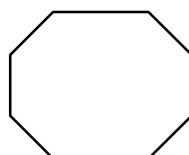
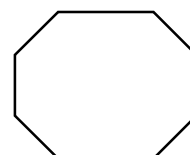
4. $32 \times 12 =$ $+$ $=$

5. $26 \times 12 =$ $+$ $=$

6. $34 \times 12 =$ $+$ $=$

7. $18 \times 12 =$ $+$ $=$

8. $44 \times 12 =$ $+$ $=$

Multiply by 12**1. 23** $\times 12 =$ **2. 26** $\times 12 =$ **3. 35** $\times 12 =$ **4. 45** $\times 12 =$ **5. 51** $\times 12 =$ **6. 53** $\times 12 =$ **7. 18** $\times 12 =$ **8. 34** $\times 12 =$ **9. 43** $\times 12 =$ **10. 52** $\times 12 =$ **11. 25** $\times 12 =$ **12. 38** $\times 12 =$ **13. 44** $\times 12 =$ **14. 14** $\times 12 =$ 

Multiply by 21

To multiply by 21, just multiply by 20
and then add the number on.
Easy!



eg $16 \times 21 = (16 \times 20) + 16 = 320 + 16 = 336$

Try these:

1. $15 \times 21 = (15 \times 20) + 15 = \boxed{} + 15 = \boxed{}$

2. $12 \times 21 = (12 \times 20) + 12 = \boxed{} + 12 = \boxed{}$

3. $26 \times 21 = (26 \times 20) + 26 = \boxed{} + 26 = \boxed{}$

4. $31 \times 21 = (31 \times 20) + 31 = \boxed{} + 31 = \boxed{}$

5. $42 \times 21 = (42 \times 20) + 42 = \boxed{} + 42 = \boxed{}$

6. $24 \times 21 = (24 \times 20) + 24 = \boxed{} + 24 = \boxed{}$

7. $18 \times 21 = (18 \times 20) + 18 = \boxed{} + 18 = \boxed{}$

8. $44 \times 21 = (44 \times 20) + 44 = \boxed{} + 44 = \boxed{}$

Multiply by 21

To multiply by 21, just multiply by 20
and then add the number on.
Easy!



eg $24 \times 21 = (24 \times 20) + 24 = 480 + 24 = 504$

Try these:

1. $14 \times 21 = (14 \times 20) + 14 = \boxed{} + 14 = \boxed{}$

2. $13 \times 21 = (13 \times 20) + 13 = \boxed{} + 13 = \boxed{}$

3. $25 \times 21 = (25 \times 20) + 25 = \boxed{} + 25 = \boxed{}$

4. $33 \times 21 = (33 \times 20) + 33 = \boxed{} + 33 = \boxed{}$

5. $43 \times 21 = (43 \times 20) + 43 = \boxed{} + 43 = \boxed{}$

6. $22 \times 21 = (22 \times 20) + 22 = \boxed{} + 22 = \boxed{}$

7. $19 \times 21 = (19 \times 20) + 19 = \boxed{} + 19 = \boxed{}$

8. $45 \times 21 = (45 \times 20) + 45 = \boxed{} + 45 = \boxed{}$

Multiply by 19

Sounds difficult, but you can do it by multiplying a number by 20 and then subtracting the number.



eg $13 \times 19 = (13 \times 20) - 13 = 260 - 13 = 247$

Try these:

1. $12 \times 19 = (12 \times 20) - 12 = \boxed{} - 12 = \boxed{}$

2. $16 \times 19 = (16 \times 20) - 16 = \boxed{} - 16 = \boxed{}$

3. $22 \times 19 = (22 \times 20) - 22 = \boxed{} - 22 = \boxed{}$

4. $25 \times 19 = (25 \times 20) - 25 = \boxed{} - 25 = \boxed{}$

5. $32 \times 19 = (32 \times 20) - 32 = \boxed{} - 32 = \boxed{}$

6. $35 \times 19 = (35 \times 20) - 35 = \boxed{} - 35 = \boxed{}$

7. $41 \times 19 = (41 \times 20) - 41 = \boxed{} - 41 = \boxed{}$

8. $44 \times 19 = (44 \times 20) - 44 = \boxed{} - 44 = \boxed{}$

Multiply by 19

Remember, you can multiply by 19 by multiplying a number by 20 and then subtracting the number.



eg $12 \times 19 = (12 \times 20) - 12 = 240 - 12 = 228$

Try these:

1. $14 \times 19 = (14 \times 20) - 14 = \boxed{} - 14 = \boxed{}$

2. $15 \times 19 = (15 \times 20) - 15 = \boxed{} - 15 = \boxed{}$

3. $23 \times 19 = (23 \times 20) - 23 = \boxed{} - 23 = \boxed{}$

4. $24 \times 19 = (24 \times 20) - 24 = \boxed{} - 24 = \boxed{}$

5. $31 \times 19 = (31 \times 20) - 31 = \boxed{} - 31 = \boxed{}$

6. $36 \times 19 = (36 \times 20) - 36 = \boxed{} - 36 = \boxed{}$

7. $42 \times 19 = (42 \times 20) - 42 = \boxed{} - 42 = \boxed{}$

8. $49 \times 19 = (49 \times 20) - 49 = \boxed{} - 49 = \boxed{}$

Multiply two digits by one

Time yourself on these, working mentally.
Remember, the quickest way is usually to multiply the tens digit first.

eg $23 \times 3 = (20 \times 3) + (3 \times 3) = 60 + 9 = 69$

1. $46 \times 2 =$

2. $35 \times 3 =$

3. $34 \times 4 =$

4. $53 \times 2 =$

5. $37 \times 3 =$

6. $24 \times 4 =$

7. $72 \times 5 =$

8. $61 \times 6 =$

9. $83 \times 5 =$

10. $64 \times 5 =$

11. $41 \times 3 =$

12. $52 \times 4 =$

13. $44 \times 6 =$

14. $53 \times 4 =$

15. $64 \times 6 =$

16. $61 \times 4 =$

17. $38 \times 3 =$

18. $55 \times 4 =$

19. $63 \times 4 =$

20. $56 \times 3 =$

How long
did you take?



Multiply two digits by one

When doing these sums, multiply the tens digit first and then the units – all in your head!
Work as quickly as you can!

eg $21 \times 3 = (20 \times 3) + (1 \times 3) = 60 + 3 = 63$

1. $47 \times 2 =$

2. $36 \times 3 =$

3. $37 \times 4 =$

4. $54 \times 2 =$

5. $38 \times 3 =$

6. $25 \times 4 =$

7. $73 \times 5 =$

8. $63 \times 6 =$

9. $86 \times 5 =$

10. $65 \times 5 =$

11. $42 \times 3 =$

12. $56 \times 4 =$

13. $46 \times 6 =$

14. $51 \times 4 =$

15. $65 \times 6 =$

16. $62 \times 4 =$

17. $39 \times 3 =$

18. $58 \times 4 =$

19. $72 \times 4 =$

20. $75 \times 3 =$

How long
did you take?



You know more than you think...

Knowing your tables helps you a lot with fractions.
Have a look below!

If $10 \times 6 = 60$ then $\frac{1}{10}$ of 60 is 6 and $\frac{1}{6}$ of 60 is 10

Try filling the gaps in these statements

1. If $3 \times 10 = 30$ then of 30 is and of 30 is
2. If $6 \times 9 = 54$ then of 54 is and of 54 is
3. If $12 \times 4 = 48$ then of 48 is and of 48 is
4. If $5 \times 9 = 45$ then of 45 is and of 45 is
5. If $4 \times 6 = 24$ then of 24 is and of 24 is
6. If $7 \times 8 = 56$ then of 56 is and of 56 is

You know more than you think...

It's amazing what you know
Have a look below!

If $12 \times 5 = 60$ then $\frac{1}{12}$ of 60 is 5 and $\frac{1}{5}$ of 60 is 12

Try filling the gaps in these statements

1. If $6 \times 10 = 60$ then of 60 is and of 60 is

2. If $5 \times 8 = 40$ then of 40 is and of 40 is

3. If $11 \times 3 = 33$ then of 33 is and of 33 is

4. If $7 \times 4 = 28$ then of 28 is and of 28 is

5. If $6 \times 7 = 42$ then of 42 is and of 42 is

6. If $9 \times 5 = 45$ then of 45 is and of 45 is

Relationship between multiplication and division

Have a quick whizz through these.

If you know that $120 \times 30 = 360$ then you can make up three other sums:

$$30 \times 120 = 360$$

$$360 \div 30 = 120 \quad \text{and}$$

$$360 \div 120 = 30$$

Make up three other sums from each of these:

1. $27 \times 13 = 351$

2. $2640 \div 55 = 48$

3. $5082 \div 66 = 77$

4. $82 \times 81 = 6642$

5. $80 \times 70 = 5600$

6. $2430 \div 45 = 54$

Make your own up!

Make up 2 multiplication and 2 division statements, (or sums) from the following sets of numbers:

1. 16, 61, 976

2. 33, 44, 1452

3. 50, 60, 3 000

4. 77, 88, 6776

5. 47, 74, 3478

6. 22, 99, 2178

Answers**Page 3**

1. $130 + 26 = 156$

2. $170 + 34 = 204$

3. $230 + 46 = 276$

4. $310 + 62 = 372$

5. $240 + 48 = 288$

6. $330 + 66 = 396$

7. $160 + 32 = 192$

8. $420 + 84 = 504$

Page 4

1. $150 + 30 = 180$

2. $120 + 24 = 144$

3. $250 + 50 = 300$

4. $320 + 64 = 384$

5. $260 + 52 = 312$

6. $340 + 68 = 408$

7. $180 + 36 = 216$

8. $440 + 88 = 528$

Page 5

1. 276

2. 312

3. 420

4. 540

5. 612

6. 636

7. 216

8. 408

9. 516

10. 624

11. 300

12. 456

13. 528

14. 168

Page 6

1. $300 + 15 = 315$

2. $240 + 12 = 252$

3. $520 + 26 = 546$

4. $620 + 31 = 651$

5. $840 + 42 = 882$

6. $480 + 24 = 504$

7. $360 + 18 = 378$

8. $880 + 44 = 924$

Page 7

1. $280 + 14 = 294$

2. $260 + 13 = 273$

3. $500 + 25 = 525$

4. $660 + 33 = 693$

5. $860 + 43 = 903$

6. $440 + 22 = 462$

7. $380 + 19 = 399$

8. $900 + 45 = 945$

Page 8

1. $240 - 12 = 228$

2. $320 - 16 = 304$

3. $440 - 22 = 418$

4. $500 - 25 = 475$

5. $640 - 32 = 608$

6. $700 - 35 = 665$

7. $820 - 41 = 779$

8. $880 - 44 = 836$

Page 9

1. $280 - 14 = 266$

2. $300 - 15 = 285$

3. $460 - 23 = 437$

4. $480 - 24 = 456$

5. $620 - 31 = 589$

6. $720 - 36 = 684$

7. $840 - 42 = 798$

8. $980 - 49 = 931$

Page 10

1. 92

2. 105

3. 136

4. 106

5. 111

6. 96

7. 360

8. 366

9. 415

10. 320

11. 123

12. 208

13. 264

14. 212

15. 384

16. 244

17. 114

18. 220

19. 252

20. 168

Page 11

1. 94

2. 108

3. 148

4. 108

5. 114

6. 100

7. 365

8. 378

9. 430

10. 325

11. 126

12. 224

13. 276

14. 204

15. 390

16. 248

17. 117

18. 232

19. 288

20. 225

Answers

Page 12**1.** $\frac{1}{3}$ of 30 is 10 and $\frac{1}{10}$ of 30 is 3**3.** $\frac{1}{12}$ of 48 is 4 and $\frac{1}{4}$ of 48 is 12**5.** $\frac{1}{4}$ of 24 is 6 and $\frac{1}{6}$ of 24 is 4**2.** $\frac{1}{6}$ of 54 is 9 and $\frac{1}{9}$ of 54 is 6**4.** $\frac{1}{5}$ of 45 is 9 and $\frac{1}{9}$ of 45 is 5**6.** $\frac{1}{7}$ of 56 is 8 and $\frac{1}{8}$ of 56 is 7**Page 13****1.** $\frac{1}{6}$ of 60 is 10 and $\frac{1}{10}$ of 60 is 6**3.** $\frac{1}{11}$ of 33 is 3 and $\frac{1}{3}$ of 33 is 11**5.** $\frac{1}{6}$ of 42 is 7 and $\frac{1}{7}$ of 42 is 6**2.** $\frac{1}{5}$ of 40 is 8 and $\frac{1}{8}$ of 40 is 5**4.** $\frac{1}{7}$ of 28 is 4 and $\frac{1}{4}$ of 28 is 7**6.** $\frac{1}{9}$ of 45 is 5 and $\frac{1}{5}$ of 45 is 9**Page 14****1.** $13 \times 27 = 351$, $351 \div 27 = 13$, $351 \div 13 = 27$ **2.** $55 \times 48 = 2640$, $48 \times 55 = 2640$, $2640 \div 48 = 55$,**3.** $66 \times 77 = 5082$, $77 \times 66 = 5082$, $5082 \div 77 = 66$,**4.** $81 \times 82 = 6642$, $6642 \div 81 = 82$, $6642 \div 82 = 81$ **5.** $70 \times 80 = 5600$, $5600 \div 70 = 80$, $5600 \div 80 = 70$ **6.** $45 \times 54 = 2430$, $54 \times 45 = 2430$, $2430 \div 54 = 45$,**Page 15****1.** $16 \times 61 = 976$, $61 \times 16 = 976$, $976 \div 16 = 61$, $976 \div 61 = 16$ **2.** $33 \times 44 = 1452$, $44 \times 33 = 1452$, $1452 \div 33 = 44$, $1452 \div 44 = 33$ **3.** $50 \times 60 = 3000$, $60 \times 50 = 3000$, $3000 \div 50 = 60$, $3000 \div 60 = 50$ **4.** $77 \times 88 = 6776$, $88 \times 77 = 6776$, $6776 \div 77 = 88$, $6776 \div 88 = 77$ **5.** $47 \times 74 = 3478$, $74 \times 47 = 3478$, $3478 \div 47 = 74$, $3478 \div 74 = 47$ **6.** $22 \times 99 = 2178$, $99 \times 22 = 2178$, $2178 \div 22 = 99$, $2178 \div 99 = 22$