# Learning Reminders

## Find lowest common multiples.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

Multiples of 2 are yellow on this grid.
Multiples of 3 are pink.

Which numbers are shaded pink and yellow on the grid?
These are the common multiples of 2 and 3 .

Which of these common multiples is the lowest?

6 is the lowest common multiple of 2 and 3.

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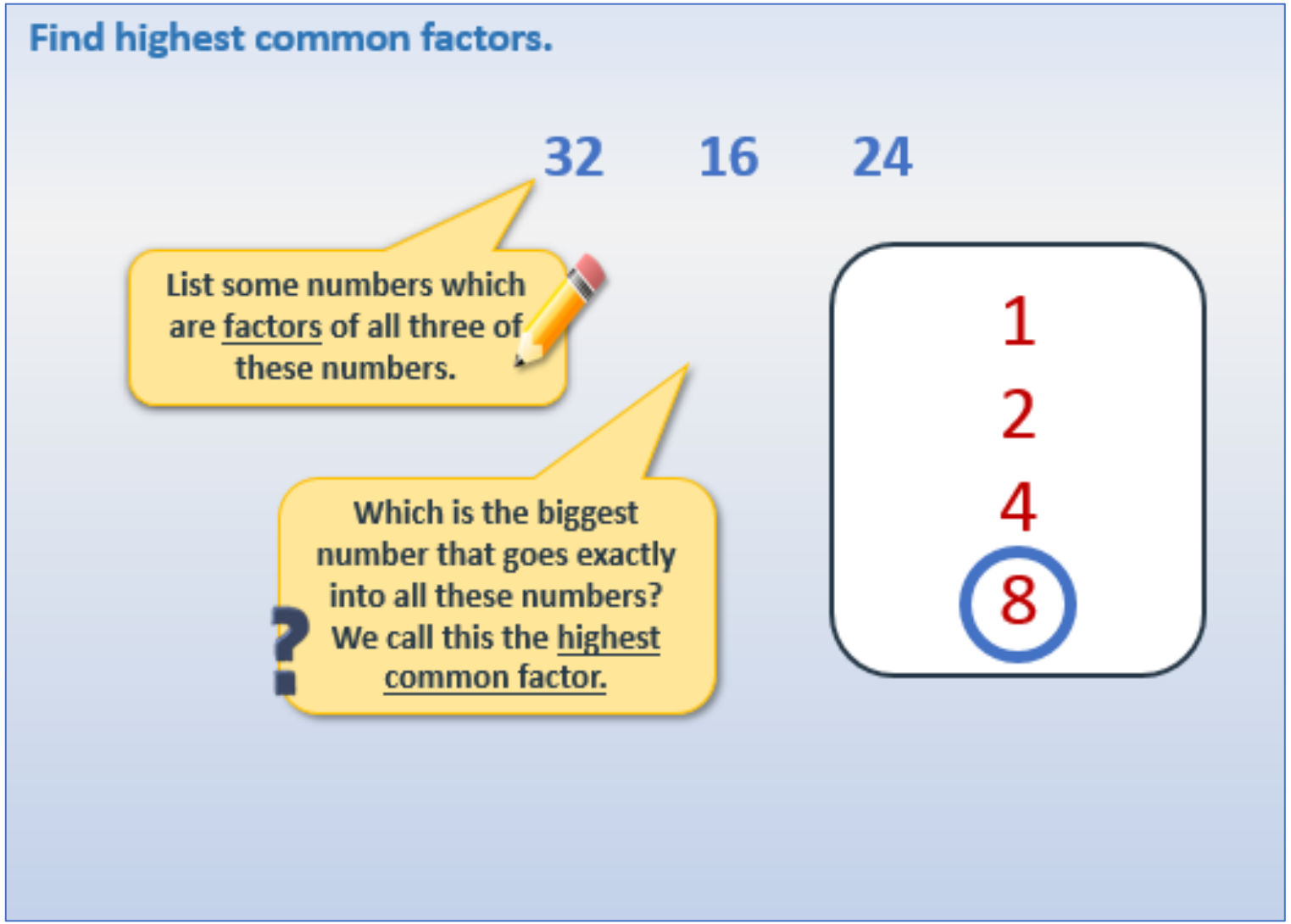


# Practice Sheet Mild

## Finding common factors and multiples

Find the highest common factor of these pairs of numbers:

1. 24 and 36
2. 14 and 28
3. 16 and 20
4. 18 and 27
5. 12 and 24

Find the lowest common multiple of these pairs of numbers:

6. 2 and 5
7. 4 and 5
8. 6 and 9
9. 4 and 6
10. 4 and 8

**Challenge**

Choose any three consecutive numbers between 2 and 9.
Can you find the lowest common multiple of the numbers?
Repeat for another three numbers.

# Practice Sheet Hot

## Finding common factors and multiples

Find the highest common factor of these sets of numbers:

1. 24, 36 and 48
2. 14, 28 and 35
3. 16, 20 and 32
4. 18, 24 and 27
5. 12, 24 and 33

Find the lowest common multiple of these sets of numbers:

1. 2, 3, 5
2. 2, 4, 5
3. 3, 6, 9
4. 3, 5, 6
5. 4, 6, 8

**Challenge**

Choose any four consecutive numbers between 2 and 9.
Can you find the lowest common multiple of the four numbers?
Repeat for another four numbers.

# Practice Sheet Answers

## Finding common factors and multiples (mild)

The highest common factors are:
1. 12
2. 14
3. 4
4. 9
5. 12

The lowest common multiples are:
6. 10
7. 20
8. 18
9. 12
10. 8

**Challenge**

Lowest 2, 3, 4 = 12
3, 4, 5 = 60 4, 5, 6 = 60 5, 6, 7 = 210 6, 7, 8 = 168
7, 8, 9 = 504

## Finding common factors and multiples (hot)

The highest common factors are:
1. 12
2. 7
3. 4
4. 3
5. 3

The lowest common multiples are:
6. 2, 3, 5 = 30
7. 2, 4, 5 = 20
8. 3, 6, 9 = 18
9. 3, 5, 6 = 30
10. 4, 6, 8 = 24

**Challenge**

2, 3, 4, 5 = 60 and 3, 4, 5, 6 = 60 are lowest.
4, 5, 6, 7 = 420 5, 6, 7, 8 = 840 6, 7, 8, 9 = 504

# A Bit Stuck?
## Array or disarray?

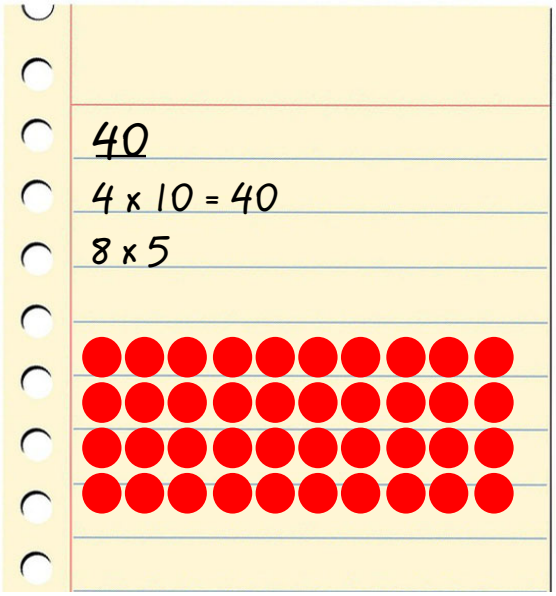
*Work in pairs*

**Things you will need:**
- 50 counters or other similar small objects, e.g. coins, raisins, sugar cubes
- A pencil and paper

**What to do:**

**16, 40, 12, 15, 25, 41, 48, 36, 50**

- Choose a number.
  Take this number of counters.
  Arrange the counters into an array (rectangle).
  Write the matching multiplication.
- Now rearrange them into as many different arrays as you can.
  Write the matching multiplication each time.
- Score one point for each multiplication you write.
- Choose another number and do the same.
  Try to score as many points as you can.
- Carry on choosing different numbers and making as many arrays as you can.
  Write the matching multiplication each time.
- Which numbers do you think will score lots of points?
  Which number do you think won't score many points?




***S-t-r-e-t-c-h:***
Find the number between 40 and 50 with the greatest number of factors, i.e. the greatest number of possible arrays.

**Learning outcomes:**
- I can make different arrays for a given number and write the matching multiplications.
- I understand that multiplication works both ways, e.g. 4 x 6 = 6 x 4.
- I am beginning to identify pairs of factors.

# Check your understanding

## *Questions*

Is the lowest common multiple of 6 and 4 smaller than the highest common factor of 30 and 45?

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- Write common factors of 24 and 48.
- Write common multiples of 3 and 5 up to 60.

  Are any numbers in both sets?

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True or false?

- There are exactly four, 2-digit, common multiples of 3 and 7.
- 4 and 5 are common factors of all 2-digit multiples of 10.
- 15 is a factor of 100.

*Fold here to hide answers*

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# Check your understanding

## *Answers*

Is the lowest common multiple of 6 and 4 smaller than the highest common factor of 30 and 45? Yes.
The lowest common multiple of 6 and 4 is 12.
The highest common factor of 30 and 45 is 15.

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- Write common factors of 24 and 48. 1, 2, 3, 4, 6, 8, 12 and 24, i.e. all the factors of 24 are also factors of 48 (but not vice versa).
- Write common multiples of 3 and 5 up to 60. 15, 30, 45 and 60.

  Are any numbers in both sets? No.

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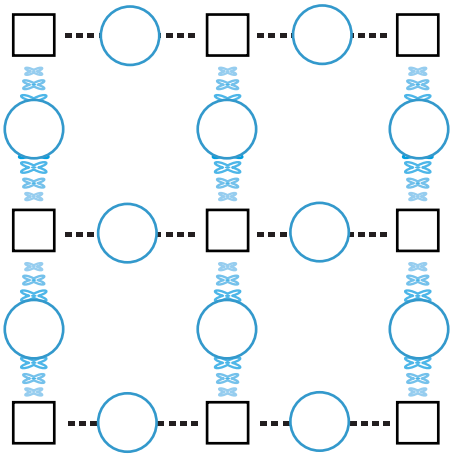
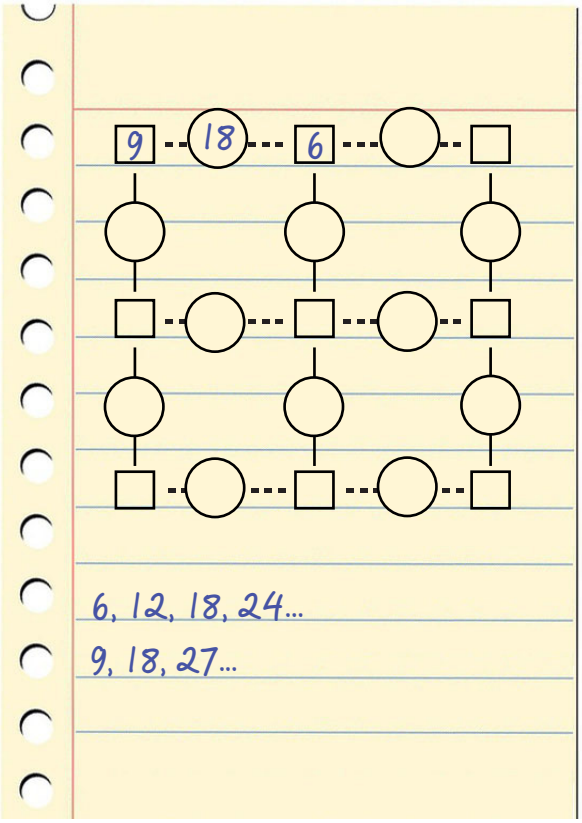
True or false?

- There are exactly four, 2-digit, common multiples of 3 and 7. True – 21, 42, 63 and 84.
- 4 and 5 are common factors of all 2-digit multiples of 10. False - they are common factors of 20, 40, 60 and 80 but not of 30, 50, 70 or 90.
- 15 is a factor of 100. False.

# Investigation
## LCM squares

1. Use this grid.






2. Write the numbers 2, 3, 4, 5, 6, 8, 9, 10 and 12 in the squares, one number in each square.

3. In the circles between each pair of squares, write the LCM (lowest common multiple) of the two numbers.

4. Add all your circled numbers, first adding pairs and crossing them out, and then adding pairs of those totals and finally adding the last three numbers.

5. Start with a new grid.

6. Re-arrange your numbers and repeat.

**FIND THE SMALLEST TOTAL POSSIBLE!**

What do you notice? Are some numbers used more than others are? Which numbers are used least? Where is it best to put the 12?

### Challenge

Demonstrate that you have found the smallest possible total.