Name & Surname: _____ Class: _____ Date: _____

FACTORS AND MULTIPLES EXPEDITION



Hunting GCFs, LCMs and hidden sums

About 45 minutes Level ★★★☆☆

GCF, LCM AND REWRITING SUMS

A factor divides a number with no remainder. The **GCF** is the largest whole number that divides both numbers. The **LCM** is the smallest number that is a multiple of both numbers.

- List **factors** to find the GCF: factors of 12 are 1, 2, 3, 4, 6, 12.
- List **multiples** to find the LCM: multiples of 4 are 4, 8, 12, 16, 20, 24.
- Rewrite a sum with the **distributive property**: 36 + 8 = 4(9+2) because 4 is the GCF.

TASK A

/4

Complete these calculations to warm up your number skills.

1

$$\begin{array}{r} 246 \\ +\ 138 \\ \hline \end{array}$$

2

$$\begin{array}{r} 503 \\ -\ 276 \\ \hline \end{array}$$

3

$$\begin{array}{r} \square 34 \\ \times\ \square\square 6 \\ \hline \end{array}$$

4

$$7\overline{)84}$$

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GREATEST COMMON FACTOR

Find GCFs for pairs up to 100.

KEY WORDS

factor: a whole number that divides another with no remainder

common factor: a factor shared by two numbers

LCM: least common multiple of two numbers

multiple: the result of multiplying a number by a whole number

GCF: greatest common factor of two numbers

distributive property: $a(b + c) = ab + ac$

TASK B

/12

Find the GCF for each pair and explain your thinking.

WARM UP

1. Find the **GCF** of 12 and 18

Answer: _____

2. Find the **GCF** of 20 and 30

Answer: _____

3. Find the **GCF** of 8 and 12

Answer: _____

4. Find the **GCF** of 9 and 15

Answer: _____

PRACTICE

5. Find the **GCF** of 36 and 48

Answer: _____

6. Find the **GCF** of 50 and 75

Answer: _____

7. Find the **GCF** of 24 and 100

Answer: _____

8. 24 and 25 have only 1 as a **common factor**. Explain how you know the **GCF** is 1.

Answer: _____

PROBLEM SOLVING

9. There are 18 girls and 24 boys in a trivia contest. Each team must have the same number of girls and the same number of boys. What is the greatest **number of teams** that can be formed?

Answer: _____

10. For those teams, how many **girls** will be on each team? Explain how you know.

Answer: _____

11. For those same teams, how many **boys** will be on each team?

Answer: _____

12. The art club has 60 stickers and 48 stamps. Kits must be identical using all items. What is the greatest **number of kits** that can be made?

Answer: _____

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MULTIPLES AND REWRITING SUMS

Find LCMs and rewrite sums with the GCF.

TASK C

/12

Find each LCM and rewrite each sum.

WARM UP

1. Find the **LCM** of 4 and 6

   Answer: _____

2. Find the **LCM** of 3 and 5

   Answer: _____

3. Find the **LCM** of 6 and 8

   Answer: _____

4. Find the **LCM** of 4 and 9

   Answer: _____

PRACTICE

5. Rewrite 36 + 8 as a **multiple** of a sum with no **common factor**

   Answer: _____

6. Rewrite 27 + 18 using its **GCF** as a **multiple**

   Answer: _____

7. Rewrite 50 + 20 using its **GCF** as a **multiple**

   Answer: _____

8. Find the **LCM** of 10 and 12

   Answer: _____

PROBLEM SOLVING

9. Hot dogs come in packs of 10 and buns in packs of 8. You want the same number of each with none left over. What is the least **number** of hot dogs to buy?

   Answer: _____

10. How many **packs** of hot dogs is that?

    Answer: _____

11. How many **packs** of buns is that?

    Answer: _____

12. Two lights blink every 6 seconds and every 8 seconds. They blink together now. In how many **seconds** will they blink together again? Explain how you know.

    Answer: _____

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MULTIPLES ON NUMBER LINES

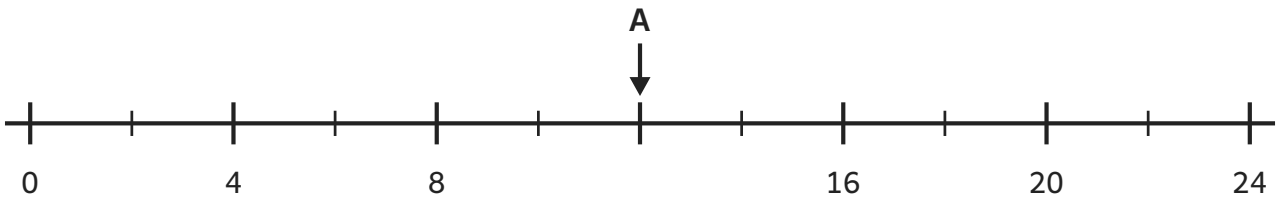
Spot common multiples and decode an exam question.

TASK D

/4

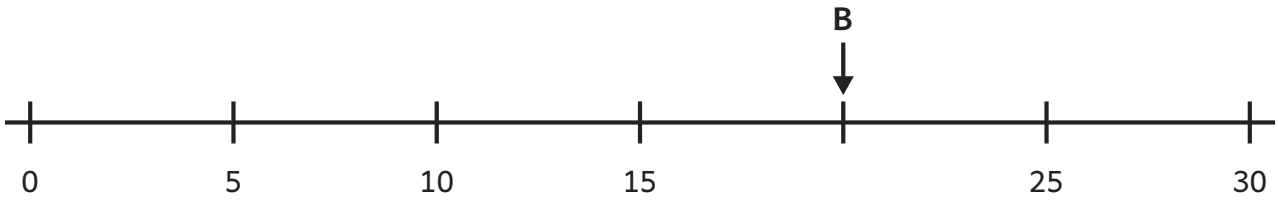
Read the multiple at each arrow, then draw an arrow at the number given.

1



A = ☐ Draw an arrow to show: 18

2



B = ☐ Draw an arrow to show: 15

TASK E

/4

Decode this exam question before you answer it.

1. Box the command word **2. Underline** the topic **3. Count** the marks: how many points? **4. Plan**, then write

Explain why 12 is the least common multiple of 4 and 6, and use the distributive property to write 12 + 20 as a multiple of a sum with no common factor. (4)

Command word	Topic	Points I need
.....	.....	.....

List multiples of 4 and 6 to show 12 is smallest shared → Show no smaller number is a multiple of both → Find GCF of 12 and 20, which is 4 → Write 4(3+5) and check 3 and 5 share no factor

My answer

.....

.....

.....

.....

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METHODS AND PYRAMID CHALLENGE

Review worked methods, then build pyramids.

TASK F

/2

Study each worked example then try the matching question.

WORKED EXAMPLE

Find the GCF of 24 and 36

1. List factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
2. List factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
3. Pick the greatest number in both **factor** lists: 12

Answer: 12

YOUR TURN

Find the GCF of 30 and 45

Answer: _____

WORKED EXAMPLE

Express 36 + 8 as a multiple of a sum with no common factor

1. Find GCF of 36 and 8: 4
2. Divide each number by 4: $\frac{36}{4} = 9$, $\frac{8}{4} = 2$
3. Write 4(9+2); 9 and 2 have no **common factor** except 1

Answer: 4(9+2)

YOUR TURN

Express 24 + 16 as a multiple of a sum with no common factor

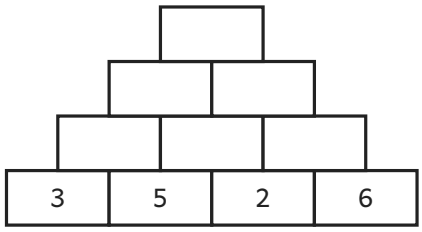
Answer: _____

TASK G

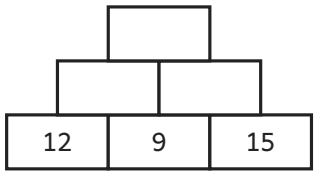
/9

Build each pyramid by adding the two numbers below.

1



2



HOW DID I DO?

Circle a face for each line.

I can find the GCF of two numbers to 100	☹ 😐 ☺
I can find the LCM of two numbers to 12	☹ 😐 ☺
I can use the distributive property to rewrite a sum	☹ 😐 ☺

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Answer sheet: Factors and Multiples Expedition

Task A

1. 246 + 138 = 384
2. 503 − 276 = 227
3. 34 × 6 = 204
4. 84 ÷ 7 = 12

Task B

1. 6
2. 10
3. 4
4. 3
5. 12
6. 25
7. 4
8. Factors of 24 are 1, 2, 3, 4, 6, 8, 12, 24 and factors of 25 are 1, 5, 25, so 1 is the only shared factor.
9. 6
10. 3 girls, because 18 divided by 6 is 3.
11. 4
12. 12

Task C

1. 12
2. 15
3. 24
4. 36
5. 4(9+2)
6. 9(3+2)
7. 10(5+2)
8. 60
9. 40
10. 4
11. 5
12. 24 seconds, because 24 is the least common multiple of 6 and 8.

Task D

1. A = 12; arrows at 18
2. B = 20; arrows at 15

Task E

Command word: Explain

Topic: LCM and distributive property

Points: List multiples of 4 and 6 to show 12 is smallest shared; Show no smaller number is a multiple of both; Find GCF of 12 and 20, which is 4; Write 4(3+5) and check 3 and 5 share no factor

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Task F

1. 15
2. 8(3+2)

Task G

1. 30 | 15, 15 | 8, 7, 8 | 3, 5, 2, 6 (top to bottom)
2. 45 | 21, 24 | 12, 9, 15 (top to bottom)

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