Divisibility Rules for 2, 3, 4, 5, 6, 9 and 10

Unit: Factors & Multiples - Student Practice Worksheet

Overview: 234 chairs, to be arranged in rows of 3 with none left over. Kabir started dividing. Anaya added 2, 3 and 4 in her head, got 9, and said yes. She was finished before he had written the first line.

Practice Questions (30 Total)

Section A - Easy

Q1. Last digit of 48 highlighted. Divisible by 2?

4 8

- ☐ **A.** Yes, it ends in an even digit
- ☐ **B.** No
- ☐ **C.** Only if you add the digits
- ☐ **D.** You must divide to know

Q2. Which digits may a number end in to be divisible by 5?

- ☐ **A.** 0 only
- ☐ **B.** 0 or 5
- ☐ **C.** 5 only
- ☐ **D.** Any odd digit

Q3. Is 27 divisible by 3?

- ☐ **A.** No
- ☐ **B.** Only by 9
- ☐ **C.** Yes, its digit sum is 9
- ☐ **D.** Yes, because it is odd

Q4. For divisibility by 10, what must the last digit be?

…n must end in **0**

- **A.** 5
- **B.** An even digit
- **C.** 1
- **D.** 0

Q5. Which digits does the divisibility test for 4 look at?

- **A.** The last digit
- **B.** The last two digits
- **C.** The digit sum
- **D.** The first two digits

Q6. Is 51 divisible by 2?

- **A.** Yes
- **B.** Yes, its digit sum is 6
- **C.** No, it ends in an odd digit
- **D.** Only by 4

Q7. Add the digits of 56. What is the digit sum?

$$5 + 6 = ?$$

- **A.** 56
- **B.** 11
- **C.** 30
- **D.** 13

Q8. Is 85 divisible by 10?

- **A.** No, it does not end in 0
- **B.** Yes
- **C.** Yes, because it ends in 5
- **D.** Only if you add the digits

Q9. Is 72 divisible by 6?

- ☐ **A.** No
- ☐ **B.** Only by 2
- ☐ **C.** Only by 3
- ☐ **D.** Yes, it passes both the 2 and 3 tests

Q10. Is 63 divisible by 9, and what does that imply for 3?

- ☐ **A.** Yes, its digit sum is 9
- ☐ **B.** No
- ☐ **C.** Only by 3
- ☐ **D.** Only if it is even

Section B - Medium

Q11. Last two digits of 1236 highlighted. Divisible by 4?

12 36

- ☐ **A.** No
- ☐ **B.** Yes, because 36 divides by 4
- ☐ **C.** Yes, because its digit sum is 12
- ☐ **D.** Only by 2

Q12. A number is even and its digit sum is 15. Which of these must divide it?

- ☐ **A.** 9
- ☐ **B.** 4
- ☐ **C.** 6
- ☐ **D.** 5

Q13. Is 4050 divisible by 9?

- ☐ **A.** No
- ☐ **B.** Only by 3
- ☐ **C.** Yes, its digit sum is 9
- ☐ **D.** Only by 5

Q14. Last two digits of 5432 highlighted. Divisible by 4?

54 32

- [ ] **A.** Yes, because 32 divides by 4
- [ ] **B.** No
- [ ] **C.** Yes, because it is even
- [ ] **D.** Only by 8

Q15. Which of these divides 3690 exactly?

- [ ] **A.** 2, 3, 5, 9 and 10
- [ ] **B.** 2 and 5 only
- [ ] **C.** 3 and 9 only
- [ ] **D.** 4 and 6 only

Q16. Is 738 divisible by 6?

- [ ] **A.** No, it fails the 2 test
- [ ] **B.** No, it fails the 3 test
- [ ] **C.** Only by 3
- [ ] **D.** Yes, it passes both tests

Q17. 2345 ends in maroon 5. Divisible by 5?

234 5

- [ ] **A.** No
- [ ] **B.** Only by 10
- [ ] **C.** Only if its digit sum divides by 5
- [ ] **D.** Yes, it ends in 5

Q18. Is 8100 divisible by 9?

- [ ] **A.** No
- [ ] **B.** Only by 3
- [ ] **C.** Yes, its digit sum is 9

- [ ] **D.** Only by 10

Q19. What is the digit sum of 6789, and is the number divisible by 3?

- [ ] **A.** 30, and no
- [ ] **B.** 30, and yes
- [ ] **C.** 21, and yes
- [ ] **D.** 24, and no

Q20. Is 1111 divisible by 2, and why the digit sum does not decide it?

- [ ] **A.** Yes
- [ ] **B.** Yes, its digit sum is 4
- [ ] **C.** Only by 11
- [ ] **D.** No, it ends in an odd digit

Section C - Challenge

Q21. Which digits x make 34x divisible by 3?

34 $\boxed{x}$ divisible by 3

- [ ] **A.** 2 only
- [ ] **B.** 2 and 5
- [ ] **C.** 2, 5 and 8
- [ ] **D.** 0, 3, 6 and 9

Q22. Why does the divisibility rule for 4 use only the last two digits?

- [ ] **A.** Because 100 divides exactly by 4
- [ ] **B.** Because 4 is an even number
- [ ] **C.** Because two digits are easier to check
- [ ] **D.** Because 10 divides by 4

Q23. Find the digit x that makes 12x divisible by 9.

- [ ] **A.** 3
- [ ] **B.** 0
- [ ] **C.** 9

- [ ] **D.** 6

Q24. Smallest 3-digit number divisible by both 4 and 9.

$\div 4$ and $\div 9$

smallest 3-digit

- [ ] **A.** 108
- [ ] **B.** 100
- [ ] **C.** 144
- [ ] **D.** 136

Q25. If a number is divisible by 3, must it be divisible by 9?

- [ ] **A.** Yes, always
- [ ] **B.** No — 12 is a counterexample
- [ ] **C.** Only if it is even
- [ ] **D.** Only if it ends in 3

Q26. Is 111111 divisible by 3?

- [ ] **A.** No
- [ ] **B.** Only by 11
- [ ] **C.** Only by 7
- [ ] **D.** Yes, its digit sum is 6

Q27. 234 chairs in rows of 3: digit sum 9. Why does that settle it?

$2+3+4 \quad = 9$

- [ ] **A.** Its digit sum is 9, a multiple of 3
- [ ] **B.** Because 234 is even
- [ ] **C.** Because it ends in 4
- [ ] **D.** She divided it quickly in her head

Q28. Why does adding the digits test for divisibility by 3?

- [ ] **A.** Because digits are always smaller than 10

- [ ] **B.** Because every power of ten leaves remainder 1 when divided by 3
- [ ] **C.** Because 3 is an odd number
- [ ] **D.** It is a rule with no explanation

Q29. A number passes both the 2 test and the 3 test. What else must be true?

- [ ] **A.** It is divisible by 9
- [ ] **B.** It is divisible by 5
- [ ] **C.** It is divisible by 6
- [ ] **D.** It is divisible by 12

Q30. Why 2-and-6 tests fail for 12, using 18 as the counterexample.

- [ ] **A.** Because 12 is too large
- [ ] **B.** Because 6 has no divisibility rule
- [ ] **C.** Because there is no rule for 12
- [ ] **D.** Because 2 and 6 share a factor, so 18 passes both

Answer Key

Q1: (A) (a) Yes, it ends in an even digit. The 2 test needs only the last digit.

Q2: (B) (b) 0 or 5. Option (a) is the rule for 10, which is stricter.

Q3: (C) (c) Yes, its digit sum is 9. Option (d) gives the right answer for entirely the wrong reason — being odd has nothing to do with it.

Q4: (D) (d) 0. Ending in 5 makes it divisible by 5 but not by 10.

Q5: (B) (b) The last two digits, because 100 divides exactly by 4 and so contributes no remainder.

Q6: (C) (c) No, it ends in an odd digit. Its digit sum of 6 does make it divisible by 3, which is what option (b) is baiting.

Q7: (B) (b) 11. Five plus six. Since 11 is not a multiple of 3, neither is 56.

Q8: (A) (a) No, it does not end in 0. Ending in 5 gets you divisibility by 5 only.

Q9: (D) (d) Yes, it passes both the 2 and 3 tests. It is even, and 7 + 2 = 9.

Q10: (A) (a) Yes, its digit sum is 9. And since 9 divides it, 3 must divide it too.

Q11: (B) (b) Yes, because 36 divides by 4. Option (c) uses the digit-sum rule, which belongs to 3 and 9, not 4.

Q12: (C) (c) 6. It passes the 2 test and the 3 test. It fails 9 because 15 is not a multiple of 9.

Q13: (C) (c) Yes, its digit sum is 9. It happens to be divisible by 5 too, but that is a separate rule.

Q14: (A) (a) Yes, because 32 divides by 4. Option (c) is not enough — every number divisible by 4 is even, but not every even number is divisible by 4.

Q15: (A) (a) 2, 3, 5, 9 and 10. It ends in 0 and its digit sum is 18, so it passes every one of those tests.

Q16: (D) (d) Yes, it passes both tests. It is even, and 7 + 3 + 8 = 18.

Q17: (D) (d) Yes, it ends in 5. Option (c) invents a rule — there is no digit-sum test for 5.

Q18: (C) (c) Yes, its digit sum is 9. Zeros contribute nothing to a digit sum.

Q19: (B) (b) 30, and yes. Six plus seven plus eight plus nine is 30, which is a multiple of 3.

Q20: (D) (d) No, it ends in an odd digit. The digit sum in option (b) is irrelevant to the 2 test.

Q21: (C) (c) 2, 5 and 8. The digit sum is 7 + x, which must reach 9, 12 or 15. Option (d) answers as though the sum were already a multiple of 3.

Q22: (A) (a) Because 100 divides exactly by 4. Every hundred, thousand and beyond therefore contributes no remainder. Option (d) is false — 10 ÷ 4 leaves 2.

Q23: (D) (d) 6. The digit sum is 3 + x, and only 3 + 6 = 9 works for a single digit. Option (a) makes the sum 6, which passes the 3 test but not the 9 test.

Q24: (A) (a) 108. It must be a multiple of 36, and 36 × 3 = 108 is the first with three digits. Option (d) divides by 4 but its digit sum is 10.

Q25: (B) (b) No — 12 is a counterexample. Its digit sum is 3, so it passes the 3 test, but 12 ÷ 9 leaves a remainder.

Q26: (D) (d) Yes, its digit sum is 6. Six ones add to 6, which is a multiple of 3.

Q27: (A) (a) Its digit sum is 9, a multiple of 3. Being even, as option (b) says, tests for 2 rather than 3.

Q28: (B) (b) Because every power of ten leaves remainder 1 when divided by 3, so each digit contributes exactly itself as a leftover.

Q29: (C) (c) It is divisible by 6, since 6 is 2 × 3 and those two share no factor. Option (d) does not follow — 18 passes both tests and is not divisible by 12.

Q30: (D) (d) Because 2 and 6 share a factor, so 18 passes both and is not divisible by 12. Use 3 and 4 instead, which share no factor.

You've got this! Keep learning and shining! - Ruchi Math Coaching