

Module 3 Review

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether or not the first number is divisible by the second number

1) 732,245; 5

A) No

B) Yes

1) _____

Find the prime factorization of the number.

2) 684

A) $2^2 \cdot 3^2 \cdot 19$

B) $2^3 \cdot 3^2 \cdot 19$

C) $3^4 \cdot 19$

D) $2^4 \cdot 19$

2) _____

3) 828

A) $2^2 \cdot 3^2 \cdot 23$

B) $2^4 \cdot 23$

C) $3^4 \cdot 23$

D) $2^3 \cdot 3^2 \cdot 23$

3) _____

4) 252

A) $3^4 \cdot 7$

B) $2^4 \cdot 7$

C) $2^2 \cdot 3^2 \cdot 7$

D) $2^3 \cdot 3^2 \cdot 7$

4) _____

Solve.

5) Several different bus routes stop at the corner of Second St. and Lincoln Ave. A Wilkenson bus arrives every 18 minutes, a Fifth Avenue bus arrives every 45 minutes and a Harris Road bus arrives every 10 minutes. If both buses arrive at the stop at 5:07 AM, how many minutes will pass before both buses arrive at the same time again? Hint: The LCM of the arrival times will give how many minutes until the next time they arrive together.

A) 45 minutes

B) 90 minutes

C) 10 minutes

D) 8100 minutes

5) _____

Find the prime factorization of the number.

6) 7425

A) $3^3 \cdot 5^3 \cdot 11$

B) $3^3 \cdot 5^2 \cdot 11$

C) $3 \cdot 5^4 \cdot 11$

D) $3^4 \cdot 5 \cdot 11$

6) _____

7) 90

A) $10 \cdot 3^2$

B) $2^2 \cdot 3^2 \cdot 5$

C) $2 \cdot 3^2 \cdot 5$

D) $2 \cdot 3 \cdot 5$

7) _____

8) 826

A) $7^2 \cdot 59$

B) $2^2 \cdot 59$

C) $14 \cdot 59$

D) $2 \cdot 7 \cdot 59$

8) _____

9) 7875

A) $5^4 \cdot 7$

B) $3^2 \cdot 5^3 \cdot 7$

C) $3^4 \cdot 7$

D) $3^3 \cdot 5^2 \cdot 7$

9) _____

Find the greatest common divisor (GCD).

10) 40 and 48

A) 4

B) 1

C) 8

D) 2

10) _____

11) 70 and 37

A) 37

B) 10

C) 7

D) 1

11) _____

12) 42, 56, and 98

A) 1

B) 14

C) 7

D) 42

12) _____

13) 168 and 378

A) 6

B) 42

C) 21

D) 14

13) _____

14) 8, 10, and 16

A) 4

B) 8

C) 1

D) 2

14) _____

Find the least common multiple (LCM).

15) 45, 28, and 150

A) 1260

B) 1,050

C) 6300

D) 630

15) _____

16) 48, 162, and 27

A) 324

B) 648

C) 432

D) 1296

16) _____

17) 60, 20, and 50

A) 3

B) 60

C) 150

D) 300

17) _____

Find the prime factorization of the number.

18) 504

A) $2 \cdot 3^4 \cdot 7$

B) $2^3 \cdot 3^3 \cdot 7$

C) $2^3 \cdot 3^2 \cdot 7$

D) $2^4 \cdot 3 \cdot 7$

18) _____

19) 126

A) $14 \cdot 3^2$

B) $2 \cdot 3^2 \cdot 7$

C) $2^2 \cdot 3^2 \cdot 7$

D) $2 \cdot 3 \cdot 7$

19) _____

20) 465

A) $3^2 \cdot 31$

B) $15 \cdot 31$

C) $5^2 \cdot 31$

D) $3 \cdot 5 \cdot 31$

20) _____

21) 6200

A) $2^2 \cdot 5^3 \cdot 31$

B) $5^4 \cdot 31$

C) $2^3 \cdot 5^2 \cdot 31$

D) $2^4 \cdot 31$

21) _____

Find the greatest common divisor (GCD).

22) 50 and 60

A) 1

B) 10

C) 2

D) 5

22) _____

23) 50 and 37

A) 5

B) 1

C) 37

D) 10

23) _____

24) 39, 52, and 91

A) 39

B) 6

C) 13

D) 1

24) _____

25) 120 and 270

A) 6

B) 30

C) 10

D) 15

25) _____

26) 14, 16, and 18

A) 1

B) 2

C) 4

D) 14

26) _____

Find the prime factorization of the number.

27) 2600

A) $2^3 \cdot 5^3 \cdot 13$

B) $2^3 \cdot 5^2 \cdot 13$

C) $2^4 \cdot 5 \cdot 13$

D) $2 \cdot 5^4 \cdot 13$

27) _____

28) 198

A) $2^2 \cdot 3^2 \cdot 11$

B) $2 \cdot 3 \cdot 11$

C) $2 \cdot 3^2 \cdot 11$

D) $22 \cdot 3^2$

28) _____

29) 795

A) $3 \cdot 5 \cdot 53$

B) $15 \cdot 53$

C) $3^2 \cdot 53$

D) $5^2 \cdot 53$

29) _____

30) 3500

A) $2^2 \cdot 5^3 \cdot 7$

B) $5^4 \cdot 7$

C) $2^3 \cdot 5^2 \cdot 7$

D) $2^4 \cdot 7$

30) _____

Determine whether or not the first number is divisible by the second number

31) 22,289; 2

A) No

B) Yes

31) _____

32) 2408; 2

A) No

B) Yes

32) _____

33) 508,074; 4

A) No

B) Yes

33) _____

34) 392,277; 9

A) Yes

B) No

34) _____

35) 19,290; 6

A) Yes

B) No

35) _____

36) 56,212; 8

A) Yes

B) No

36) _____

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

37) Complete the Sieve of Eratosthenes.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine if the item described is designed in accordance with the golden ratio.

38) An archway has a height of 6.6 meters and a width of 4.1 meters.

A) Yes

B) No

38) _____

39) A room has a length of 2.58 feet and a width of 1.70 feet.

A) Yes

B) No

39) _____

40) A modern sculpture has a width of 3370 centimeters and a height of 5453 centimeters.

A) No

B) Yes

40) _____

Determine whether the sequence is a Fibonacci-type sequence. If it is, determine the next two terms of the sequence.

41) -9, 4, -5, -1, -6 ... 41) _____
 A) Yes; -7, -13 B) Yes; -7, -4 C) Yes; -11, -17 D) No

42) -7, 3, -4, -11, -15 ... 42) _____
 A) Yes; -26, -37 B) No C) Yes; -19, -30 D) Yes; -26, -41

Solve the problem.

43) If March is your starting month, what month will it be 32 months from March? 43) _____
 A) October B) December C) April D) November

44) If February is your starting month, what month will it be 41 months from February? 44) _____
 A) June B) August C) July D) December

45) If July is your starting month, what month will it be 5 years and 9 months from July? 45) _____
 A) June B) August C) April D) March

Perform the modular arithmetic operation.

46) $4 \cdot 5 \pmod{7}$ 46) _____
 A) 5 B) 6 C) 2 D) 7

47) $(45 - 23) \pmod{5}$ 47) _____
 A) 3 B) 110 C) 2 D) 1

Solve the problem.

48) If August is your starting month, what month will it be 5 years and 8 months from August? 48) _____
 A) June B) August C) April D) March

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

49) 496 is a perfect number. 49) _____

50) We learned in the text, $2^{n-1}(2^n - 1)$ is perfect when $(2^n - 1)$ is prime. Find 5 perfect numbers. 50) _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

51) One of Fermat's proven theorems is "*Every odd prime can be expressed as the difference of two squares in one and only one way.*" Express 31 and 53 as the difference of two squares. 51) _____

52) Fermat Near Misses. 52) _____

In "Homer³ we saw the equation $1782^{12} + 1841^{12} = 4472^{12}$, my calculator says it is true because $1782^{12} + 1841^{12} = 2.541210259 \cdot 10^{39}$ and $4472^{12} = 2.541210259 \cdot 10^{39}$. Why is my calculator wrong.

Answer Key

Testname: MODULE3REVIEW

- 1) B
- 2) A
- 3) A
- 4) C
- 5) B
- 6) B
- 7) C
- 8) D
- 9) B
- 10) C
- 11) D
- 12) B
- 13) B
- 14) D
- 15) C
- 16) D
- 17) D
- 18) C
- 19) B
- 20) D
- 21) C
- 22) B
- 23) B
- 24) C
- 25) B
- 26) B
- 27) B
- 28) C
- 29) A
- 30) A
- 31) A
- 32) B
- 33) A
- 34) B
- 35) A
- 36) B
- 37)
- 38) A
- 39) B
- 40) B
- 41) A
- 42) B
- 43) D
- 44) C
- 45) C
- 46) B
- 47) C
- 48) C
- 49) FALSE
- 50) FALSE

Answer Key

Testname: MODULE3REVIEW

51)
52)