Mathematics Grade 6 Unit 02: Numerical Understanding and Operations: Factors, Multiples, and Operations with Whole Numbers 2012-2013

1 Mr. Jones charged Roberta $55 for parts and $20 per hour for labor to repair her bicycle. He spent 2 hours repairing her bike. Using the expression below, calculate the amount Roberta owes him?

$$55 + 2 \times 20$$

A $130

B $150

C $95

D $77

2 Given the following expression, which operation should be evaluated FIRST?
17 + 95 - 26 - 7 × 123

F subtraction

G division

H addition

J multiplication

3 Kevin baked 30 sugar cookies and 40 chocolate chip cookies for a bake sale. He made packages of chocolate chip cookies and packages of sugar cookies. Each package has the same number of cookies. Which of the following could be the number of cookies in each package?

A 3

B 4

C 5

D 6

4 Faydra has a piece of red ribbon 48 inches long and a piece of blue ribbon 60 inches long. She wants to cut both pieces of ribbon into equal length strips to use for prizes at the school science fair.

A. Show the prime factorization of 48 and 60, using exponents.

B. Without wasting any ribbon and using whole numbers only, what is the longest possible length each strip of ribbon could be?

C. Name one other length that could be the length of each strip of ribbon, without wasting any ribbon and using whole numbers only.

GO ON

5 Identify a common multiple of 5, 6, & 20.

A 20

B 30

C 100

D 120

6 Evaluate the following expression:

$$14 + 4 \times (15 - 5) \div 5$$

F 180

G 36

H 22

J 6

7 Select the process you would follow for evaluating the expression:

$$2(12 - 4) \div 4 + 10$$

A multiply, divide, subtract, add

B subtract, divide, multiply, add

C subtract, multiply, divide, add

D add subtract, multiply, divide

8 Given the number 250:

A. What is the prime factorization of the number?

B. How can the prime factorization be written using exponents?

9 A card game can be played with 2, 3, 4, 5, or 6 players and each player always has an equal number of cards. Identify the LEAST number of cards that can be in the deck.

A 24

B 20

C 60

D 30

GO ON

10 What number is the greatest common factor of 16 and 36?

F 9

G 8

H 4

J 2

11 Patsy and Penny evaluated this expression:

$$17 + 3 - 3(5)$$

Patsy got 5 for an answer, and Penny got 85.

A. Who is correct?

B. What mistake could the other person have made?

12 What is the GREATEST common factor of 30 and 120?

F 5

G 9

H 15

J 30

13 What is the LEAST common multiple of 12 and 10?

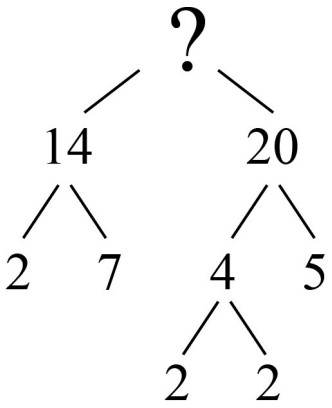
A 3

B 30

C 60

D 120

14 Which number is represented by the following tree diagram?



F 210

G 280

H 35

J 315

GO ON

15 The Munstead family was planning a party for their daughter, Margo's, 15th birthday. They decided to hire a caterer. The caterer charges a setup fee of $75, plus $10 per person. Margo's grandmother sent $50 to be used for the party. Use the expression below to correctly calculate the amount the Munstead family owes the caterer if 25 people attended the party.

$$75 + 25 \times 10 - 50$$

A $2,075

B $275

C $375

D $725

16 Which of the following shows the prime factorization of 90, using exponents?

F 6×10^1

G $2^2 \times 3 \times 5$

H $2 \times 3^2 \times 5$

J $10 \times 3 \times 2^1$

STOP

Test Key

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##	Item #	Correct Answer	Primary SE	Secondary SE	Obj/Cat
1	M061086586D	C	6.2(E) [R]	None	STAAR: M1
2	M061104714D	J	6.2(E) [R]	None	STAAR: M1
3	M063022577	C	6.1(E) [S]	6.13(A) [P]	STAAR: M1
4	M063022584	0 to 3	6.1(E) [S]	6.11(A) [P]	STAAR: M1
5	M061061014RX	D	6.1(F) [S]	None	None
6	M061104722D	H	6.2(E) [R]	None	STAAR: M1
7	M06025333CS	C	6.2(E) [R]	None	STAAR: M1
8	M061148229D	A. $2 \times 5 \times 5 \times 5$ B. 2×5^3	6.1(D) [S]	6.12(A) [P]	STAAR: M1
9	M061082315RX	C	6.1(F) [S]	6.11(C) [P]	STAAR: M1
10	M063022602	H	6.1(E) [S]	None	STAAR: M1
11	M061104734D	A. Patsy B. Penny followed the correct order of the operations on the first part of the problem and got 15. Then she did not subtract the sum of (7 + 3) or 10. Instead Penny subtracted 7 from 15 and then added 3 to get 11.	6.2(E) [R]	6.13(B) [P]	STAAR: M1
12	M061082311RX	J	6.1(E) [S]	None	STAAR: M1
13	M061082307RX	C	6.1(F) [S]	None	STAAR: M1
14	M061082305RX	G	6.1(D) [S]	6.11(D) [P]	STAAR: M1
15	M061086588D	B	6.2(E) [R]	6.11(A) [P]	STAAR: M1
16	M061082303RX	H	6.1(D) [S]	None	STAAR: M1

Scoring Rubrics

4 A. $48 = 2^4 \times 3$
$60 = 2^2 \times 3 \times 5$
B. 12 inches
C. 6 inches (or 4, 3, 2 or 1)

3	The response shows full understanding of the essential mathematics applicable to the task and a sound approach toward solution that includes logical reasoning and appropriate conclusions. Computation and procedures used are generally accurate, but the response may contain minor computational or procedural flaws that do not detract from evidence of full understanding.
2	The response shows a satisfactory understanding of the essential mathematics applicable to the task, but reasoning may not be completely clear, and there may be minor flaws in computation and/or use of procedures as a result of carelessness or non-essential misunderstandings. The flaws do not detract from evidence of satisfactory understanding. A score of 2 may also be earned if the response is partially correct but some aspect of the task is omitted.
1	The response indicates limited understanding of the essential mathematics applicable to the task. While an effort is made to address the task, omissions and/or errors related to insufficient mathematical knowledge or incorrect application of skills or procedures bring into question if student has the ability to deal successfully with tasks of this type.
0	The response indicates no understanding of the essential mathematics applicable to the task, or there is no response.