Nebraska NSCAS Grade 6 Math Practice

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NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Mathematics Reference Sheet

Shape	Area	Circumference
Circle	$A = \pi r^2$	$C = \pi d = 2\pi r$
Triangle	$A = \frac{1}{2}bh$	**Perimeter**
Rectangle	$A = l \times w$	$P = 2l + 2w = 2(l + w)$
Square	$A = s \times s$	$P = s + s + s + s$
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$	
Parallelogram	$A = bh$	

Key	
b = base	l = length
h = height	w = width
B = area of base	s = side length
H = height of triangular prism	
s_1, s_2, s_3 are the lengths of each side of the triangular base	
d = diameter	r = radius
Use 3.14 for π.	

3 – Dimensional Shape	Volume	Surface Area
Rectangular Prism	$V = lwh = Bh$	$SA = 2lw + 2lh + 2wh = 2B + 2lh + 2wh$
Triangular Prism	$V = \frac{1}{2}lwh = Bh$	$SA = bh + (s_1 + s_2 + s_3)H = 2B + (s_1 + s_2 + s_3)H$
Cone	$V = \frac{1}{3}\pi r^2 h$	
Cylinder	$V = \pi r^2 h$	
Sphere	$V = \frac{4}{3}\pi r^3$	

Percent Change
$\%\ \text{change} = \frac{\text{difference in amount}}{\text{original amount}}$

Pythagorean Theorem
$c^2 = a^2 + b^2$

Standard Units	Metric Units
Conversions – Length	
1 foot (ft) = 12 inches (in.)	1 centimeter (cm) = 10 millimeters (mm)
1 yard (yd) = 3 feet (ft) = 36 inches (in.)	1 meter (m) = 100 centimeters (cm)
1 mile (mi) = 1,760 yards (yd) = 5,280 feet (ft)	1 meter (m) = 1,000 millimeters (mm)
	1 kilometer (km) = 1,000 meters (m)
Conversions – Volume	
1 cup = 8 fluid ounces (fl oz)	1 liter (l) = 1,000 milliliters (ml)
1 pint (pt) = 2 cups	1 liter (l) = 1,000 cubic centimeters (cu. cm)
1 quart (qt) = 2 pints (pt)	
1 gallon (gal.) = 4 quarts (qt)	
Conversions – Weight/Mass	
1 pound (lb) = 16 ounces (oz)	1 gram (g) = 1,000 milligrams (mg)
1 ton = 2,000 pounds (lb)	1 kilogram (kg) = 1,000 grams (g)

2021-2022

NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Grade 6 - Item Type Sampler
Mathematics

Directions:

On the following pages of your booklet are questions for the Grade 6 *Nebraska Student-Centered Assessment System Mathematics (NSCAS-M)* Item Type Sampler.

Read these directions carefully before beginning this item type sampler.

This item type sampler will include several different types of questions. Multiple choice questions will ask you to select an answer from among four choices. Multiple select questions will ask you to select multiple correct answers from among five or more choices. For some questions, there may be two parts, Part A and Part B, where each part has a multiple choice or multiple select question. These questions will be found in your item type sampler.

For all questions:

- Read each question carefully and choose the best answer.
- You may use scratch paper to solve the problems.
- The Mathematics Reference Sheet is provided in the back of the Mathematics section. You may refer to this page at any time during the sampler.
- You may use a calculator ONLY for questions 1–6. You may NOT use a calculator for any other questions on this sampler.
- Be sure to answer ALL the questions.

When you come to the word STOP at the end of Part 1, you have finished Part 1 of the Grade 6 NSCAS Growth Mathematics Item Type Sampler. You may review ONLY Part 1 to check your answers. Your calculator must be collected before you can continue with Part 2. When your calculator has been collected, and your proctor has given you permission, you may move on to Part 2.

When you are finished with Part 2, you may review ONLY Part 2 to check your answers.

STOP.

1. When $n = 11$, what is the value of $10 - (n + 6)$?

   A. -7

   B. 5

   C. 7

   D. 27

2. Which list orders the numbers from least to greatest?

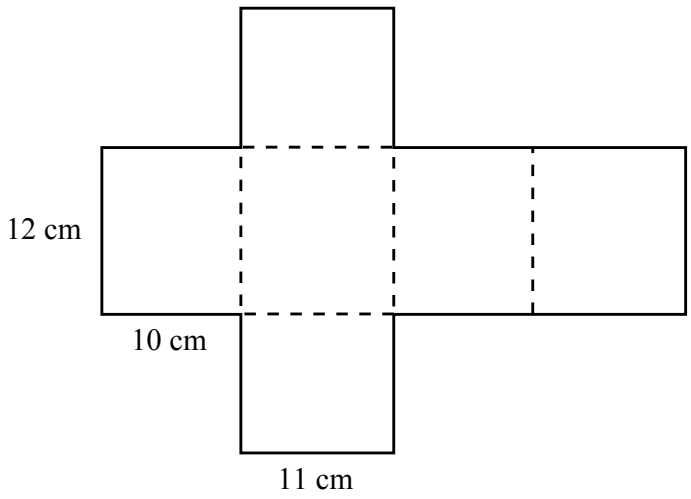
   A. $6.25, \quad 6.5, \quad 6\frac{4}{5}, \quad 6\frac{3}{4}$

   B. $6.5, \quad 6.25, \quad 6\frac{3}{4}, \quad 6\frac{4}{5}$

   C. $6.25, \quad 6.5, \quad 6\frac{3}{4}, \quad 6\frac{4}{5}$

   D. $6.5, \quad 6\frac{4}{5}, \quad 6.25, \quad 6\frac{3}{4}$

3. **Use the net to answer the questions.**



Part A

What are the different areas of the faces of the figure formed by the net? Select **all** that apply.

A. 100 square centimeters

B. 110 square centimeters

C. 120 square centimeters

D. 121 square centimeters

E. 132 square centimeters

F. 144 square centimeters

Part B

What is the surface area of the figure formed by the net?

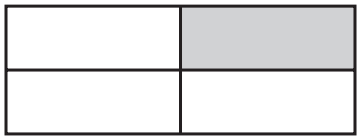
A. 362 square centimeters

B. 720 square centimeters

C. 724 square centimeters

D. 1,320 square centimeters

4. **Use the picture below to answer the question.**



Which option lists the fraction, decimal, and percent that represent the shaded part?

A. $\frac{1}{4}$, 0.20, 20%

B. $\frac{1}{4}$, 0.25, 25%

C. $\frac{1}{4}$, 0.4, 40%

D. $\frac{1}{4}$, 0.75, 75%

5. **Use the table below to answer the question.**

Sale Items

T-shirts	Price
Science Club	$15.00
Student Council	$13.00
Reading Classic	$9.00
Math Club	$15.00

What is the mean price of the t-shirts?

A. $12.00

B. $13.00

C. $14.00

D. $15.00

6. A salad dressing is made by combining 2 parts vinegar with 5 parts oil. How many ounces of oil should be mixed with 9 ounces of vinegar?

   A. 2 ounces of oil

   B. 3.6 ounces of oil

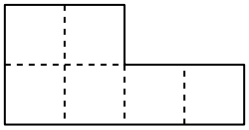
   C. 22.5 ounces of oil

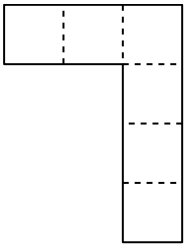
   D. 63 ounces of oil

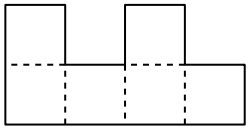
STOP.

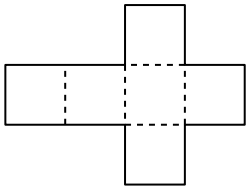
7. **Use the figure to answer the question.**

Which net could be used to form the figure?

A. 

B. 

C. 

D. 

8. Which algebraic expression represents four times the quantity 22 less than x ?

A. $4(x-22)$

B. $(4 \bullet 22)-x$

C. $4(22-x)$

D. $(x \bullet 4)-22$

9. What is $\left|-\frac{2}{3}\right|$?

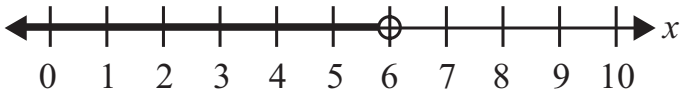
A. $\frac{3}{2}$

B. $-\frac{3}{2}$

C. $\frac{2}{3}$

D. $-\frac{2}{3}$

10. **Use the graph below to answer the question.**



Which inequality is represented by the graph?

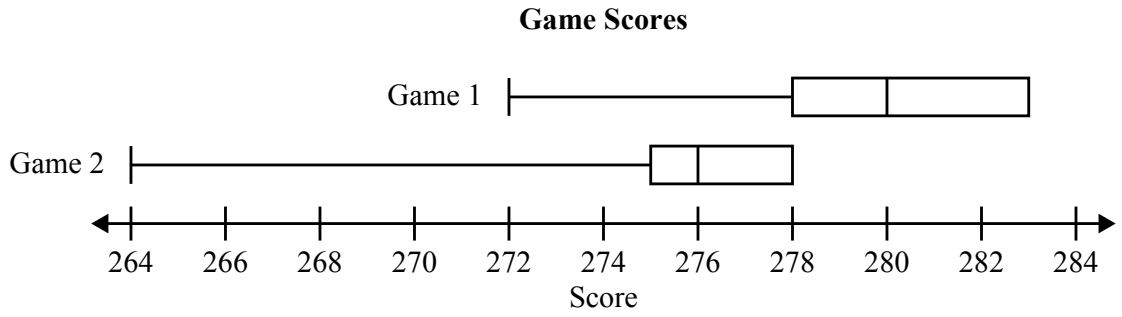
A. $x < 6$

B. $x > 6$

C. $x < 0$

D. $x > 0$

11. The box plots represent the scores earned by 20 students in the computer club in two different online games.



Which conclusions can be made about the data in the box plots? Select **all** that apply.

A. The highest score in Game 2 was 278.

B. In Game 1, 50% of the scores were between 278 and 280.

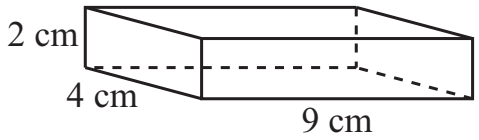
C. In Game 2, 25% of the scores were between 276 and 278.

D. The difference in the median scores for the two games is 4.

E. The difference in the maximum scores for the two games is 5.

F. The students' scores were greater in Game 2 than in Game 1.

12. **Use the picture below to answer the question.**



What is the volume of the rectangular prism?

A. 15 cubic centimeters

B. 22 cubic centimeters

C. 72 cubic centimeters

D. 124 cubic centimeters

13. Which expression is the prime factorization of 100?

A. $2^2 \cdot 5^2$

B. $2^2 \cdot 25$

C. $4 \cdot 5^2$

D. $4 \cdot 25$

14. What is the value of y in the equation $\frac{y}{4} = 8$?

A. 2

B. 4

C. 12

D. 32

15. A group of students makes a map of the area around their school. They place the school at $(0, 0)$. The nearest store is placed at the point $(-5, 7)$. In which quadrant is the point representing the nearest store?

A. Quadrant I

B. Quadrant II

C. Quadrant III

D. Quadrant IV

16. **Part A**

What is the product of 34.5×2.76?

A. 51.75

B. 95.22

C. 706.90

D. 716.22

Part B

What is the quotient of $34.5 \div 2.76$?

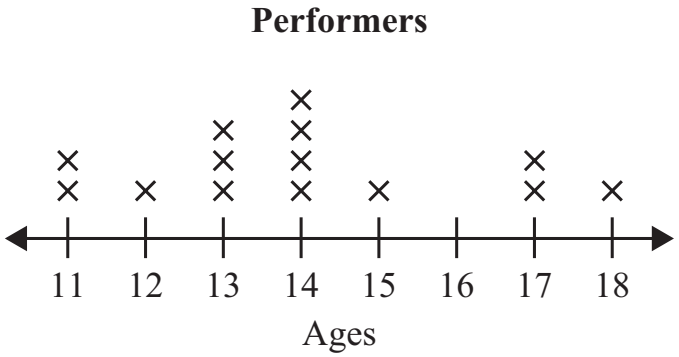
A. 1.25

B. 1.33

C. 12.50

D. 13.30

17. **Use the line plot below to answer the question.**



The line plot shows the ages of the performers in a play. How many performers are older than 13?

A. 4 performers

B. 8 performers

C. 11 performers

D. 14 performers

18. Owen has $1\frac{1}{2}$ gallons of fruit punch. He pours the punch into glasses that hold $\frac{1}{16}$ gallon. How many glasses can Owen fill with fruit punch?

A. 11 glasses

B. 24 glasses

C. 32 glasses

D. 48 glasses

19. Which set of integers is in order from least to greatest?

A. $-9, \quad -6, \quad -3, \quad 7, \quad 11$

B. $-3, \quad -6, \quad 7, \quad 11, \quad -9$

C. $11, \quad -9, \quad 7, \quad -6, \quad -3$

D. $7, \quad 11, \quad -6, \quad -3, \quad -9$

20. **Use the table to answer the question.**

Number of Juice Boxes	6	12	18	24
Number of Cookies	10	20	30	40

Which ratios of juice boxes to cookies are equivalent to the ratios in the table? Select **all** that apply.

A. $\frac{1 \text{ juice box}}{2 \text{ cookies}}$

B. $\frac{9 \text{ juice boxes}}{15 \text{ cookies}}$

C. $\frac{34 \text{ juice boxes}}{50 \text{ cookies}}$

D. $\frac{36 \text{ juice boxes}}{60 \text{ cookies}}$

E. 3 juice boxes to 5 cookies

F. 15 juice boxes to 9 cookies

G. 21 juice boxes to 35 cookies

NSCAS Growth Grade 6
Item Type Sampler Answer Key
Mathematics

Sequence	Key	Points
1.	**A**	**1**
2.	**C**	**1**
3.	Part A: **B, C, E** Part B: **C**	**2**
	Part A or Part B	**1**
4.	**B**	**1**
5.	**B**	**1**
6.	**C**	**1**
7.	**D**	**1**
8.	**A**	**1**
9.	**C**	**1**
10.	**A**	**1**
11.	**A, D, E**	**2**
	Two correct and no more than one incorrect	**1**
12.	**C**	**1**
13.	**A**	**1**
14.	**D**	**1**
15.	**B**	**1**
16.	Part A: **B** Part B: **C**	**2**
	Part A or Part B	**1**
17.	**B**	**1**
18.	**B**	**1**
19.	**A**	**1**
20.	**B, D, E, G**	**2**
	Three correct and no more than one incorrect or Two correct with no incorrect	**1**