6^{th} Grade Math Review Packet

You must show your work when solving the problems in this packet. You can choose to do the work on the worksheet if there is enough room or do the work on a separate piece of paper and attach it to the packet. Be sure to be neat and organized so that we can follow the work for each problem and label the paper with the page number of the packet.

Solve the problems.

1 A pottery maker can make 24 vases in 8 days. If the pottery maker works 6 hours each day, how long does it take to make 1 vase?

A 2 hours

B 3 hours

C 4 hours

D 6 hours

2 A carpenter needs to make 60 dowels. Each dowel must be 6 inches long. The wood from which the carpenter will cut the dowels comes in 4-foot lengths. What is the *least* number of 4-foot lengths of wood the carpenter can buy and still make all 60 dowels?

A 6

B 7

C 8

D 9

3 One batch of vegetable soup uses 2 cups of chopped onions, 1.5 cups of chopped celery, and 1 cup of chopped carrots. Select each ratio that will help a chef compare cups of chopped carrots to total cups of chopped vegetables. Circle all that apply.

A 2 to 7

B 2 to 9

C 4 to 9

D 4 to 18

E 9 to 2

4 A company sells crushed rock in 16-pound bags, each bag containing a mixture of quartz and marble. The table below lists the amounts of quartz and marble needed to fill a certain number of bags. If the ratio of quartz to marble is the same for every bag, fill in the empty cells to complete the table.

Bags of Rock

Number of Bags	Quartz (pounds)	Marble (pounds)
3	27	21
8		56
	99	
14		98
	135	

5 A bookstore is having a sale in which you can get 4 notebooks for $7.00 and 10 folders for $2.50. How much will it cost Rico to buy 5 notebooks and 6 folders?

Show your work.

Answer _____

6 Shoe store A is having a sale in which every pair of shoes is 40% off the regular price. Shoe store B is having a sale in which $40 is deducted from the regular price.

Part A Richard is comparing the price of the same pair of shoes in both stores. In both stores, the shoes normally sell for $120. Which store has the better bargain?

Show your work.

Answer _____

Part B Gwen buys 3 identical pairs of shoes at Store A. She pays $110.25 after the discount. What is the regular price of each pair?

Show your work.

Answer _____

Performance Task

Answer the questions and show all your work on separate paper.

A local snack food company asks you to develop a healthy trail mix recipe. They will sell the trail mix in a 6-serving package. The company gives you a list of requirements.

- The ratio of weight of fruits to weight of nuts and/or seeds must be 2 : 1.
- The trail mix must have 4 or more ingredients.
- One serving must be between 1 and 2 ounces.
- The cost per serving must be between $0.35 and $0.50.

Develop your recipe and include the total weight and cost for 1 serving. Then write your recipe for 6 servings and include the total weight and cost for this amount. Explain how your recipe meets all the requirements.

Checklist

Did You . . .

- ☐ Find the costs per ounce?
- ☐ Meet all the requirements?
- ☐ Check all your calculations?

Ingredient	Cost per pound
Nuts and Seeds	
Peanuts	$3.99
Almonds	$7.99
Sunflower seeds	$2.99
Fruits	
Dried banana chips	$3.49
Dried cranberries	$4.99
Raisins	$4.99

Reflect

Reflect on Mathematical Practices After you complete the task, choose one of the following questions to answer.

- **Persevere** What was your plan for solving the problem?
- **Be Precise** How did you make sure you met all the requirements?

Solve the problems.

1 Randi has a party-sized sandwich that is $\frac{3}{4}$ yard long. She will cut it into smaller sandwiches that are each $\frac{1}{12}$ yard long. Which expression can be used to determine the number of smaller sandwiches Randi can cut?

A $\frac{12}{1} \div \frac{3}{4}$

B $\frac{4}{3} \div \frac{1}{12}$

C $\frac{3}{4} \times \frac{12}{1}$

D $\frac{3}{4} \times \frac{1}{12}$

2 A scientist recorded the top flight speed of two peregrine falcons. One flew 306.87 km/h, and the other flew 298.59 km/h. What was the difference between their two speeds?

A 8.28 km/h

B 8.36 km/h

C 16.28 km/h

D 108.36 km/h

3 Which point is the image of point $R(4, -7)$ first reflected across the x-axis and then across the y-axis?

A $(-4, -7)$

B $(-7, -4)$

C $(4, -7)$

D $(-4, 7)$

4 Pricilla's Perfect Pie factory uses a scale to reject pies that are more than 3.2 ounces from the target weight of 28 ounces. The factory's scale is calibrated to show how close a pie weighs to the target weight. The scale will display:

- A positive number if the pie's weight is over 28 ounces.
- A negative number if the pie's weight is less than 28 ounces.
- Zero if the weight is exactly 28 ounces.

Which pie will be rejected by the scale? Select all that apply.

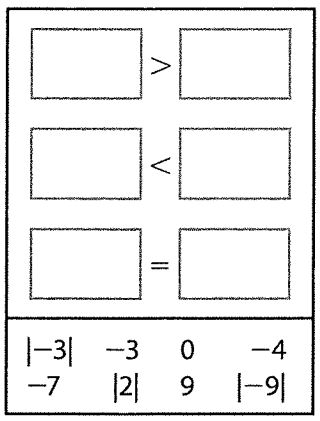
A A pie with a reading of -2.8 ounces.

B A pie with a reading of 3.5 ounces.

C A pie with a reading of -3.3 ounces.

D A pie with a reading of 28 ounces.

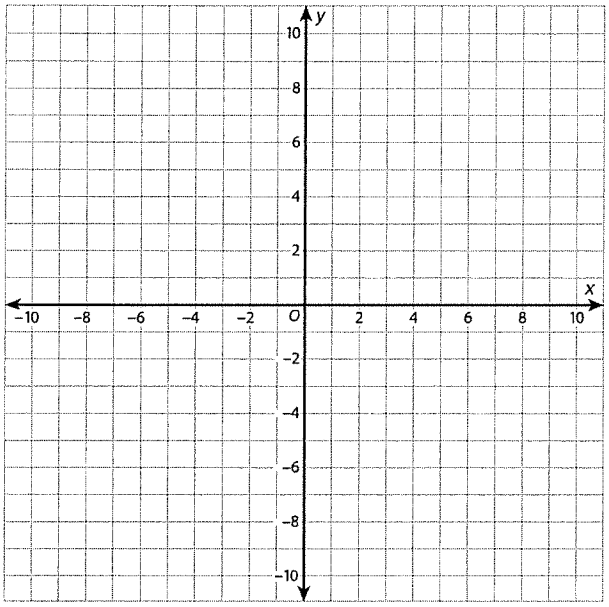
5 From the list below, write a number in each box to create three true mathematical statements. Each number can be used only once.



$\lvert -3 \rvert$	-3	0	-4
-7	$\lvert 2 \rvert$	9	$\lvert -9 \rvert$

6 You can use all four quadrants of the coordinate plane when making polygons.

Part A Draw a rectangle on the grid by plotting the points (−3, −2), (−3, 3), (6, −2), and (6, 3).



Part B What are the length and width of the rectangle that you made in Part A?

Answer _____

7 Mr. Novak asked his students to use the distributive property and the greatest common factor (GCF) at the same time to express 18 + 45 in a different way. Jude and Rachel came up with the expressions below.

Jude: 9(2 + 5)

Rachel: 3(6 + 15)

Which student followed Mr. Novak's directions correctly? Explain your answer.

_____

_____

_____

_____

_____

_____

_____

Performance Task

Answer the questions and show all your work on separate paper.

Reema wants to build a coat rack for the front hallway. The wall is 4 feet long, and the piece of wood she has for the rack is $28\frac{1}{4}$ inches long. She wants to center the coat rack on the wall. There needs to be an equal amount of space, about 7 or 8 inches, between the coat hooks. The first and last hooks should be no less than $1\frac{3}{4}$ inches from either end of the wood. How many hooks should Reema use? What is the distance between the hooks? What is the distance of each hook from the left edge of the wood?

Checklist

Did You . . .

- ☐ Draw a detailed diagram?
- ☐ Check all your calculations?
- ☐ Complete all parts of the problem?

Draw and label a diagram of the coat rack on the wall. Mark all the measurements for placing the wood on the wall, and for attaching the hooks on the wood. You can use either fractions or decimals to label and calculate the measurements.

Reflect

Reflect on Mathematical Practices After you complete the task, choose one of the following questions to answer.

- **Model** What models helped you to solve this problem? How did they help?
- **Be Precise** When was it easier to use fractions, and when was it easier to work with decimal numbers?

Solve the problems.

1 Which of the following is equivalent to the expression $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$?

A $4 \times \frac{1}{4}$

B $\left(\frac{1}{4}\right)^4$

C $\left(\frac{1}{4}\right)^{16}$

D $4^{\frac{1}{4}}$

2 Which question can be answered by using the equation $5x = 150$?

A Leslie must divide 150 pieces of candy equally among 5 bags. How many pieces, x, will each bag hold?

B Mario will split 30 marigold plants among 5 garden plots. How many plants, x, will each plot hold?

C Nel wants to run 30 miles over the next 5 days. How many miles, x, will she run during that time?

D Omar plans to sell 150 calendars for a fundraiser in the next 30 days. How many calendars, x, must he sell each day to reach his goal?

3 Which student wrote an expression equivalent to $6x + 4x^3$? Circle all that apply.

A Anne wrote $(6 + x) + (4 + x^3)$.

B Bart wrote $6x(1 + \frac{2}{3}x^2)$.

C Cassie wrote $3x + 3x + 2x^3 + 2x^3$.

D David wrote $x(6 + 4x^2)$.

E Edgar wrote $10 + x^4$.

4 The table shows the total cost for different numbers of nights at a campground. Choose *True* or *False* for each statement.

Number of nights, *n*	2	5	7	12
Total cost, *c*	$32	$80	$112	$192

a. The independent variable is c, and the dependent variable is n.

☐ True ☐ False

b. It would cost $96 to stay at the campground 6 nights.

☐ True ☐ False

c. If Danielle spent $48 for a campsite, then she paid for 3 nights.

☐ True ☐ False

d. The equation $c = 16n$ can be used to represent this situation.

☐ True ☐ False

5 What is the value of $\frac{3x^2 + 2(y - 1)}{x + y^2}$ when $x = 4$ and $y = 3$?

Show your work.

Answer _____

6 Kimberly is selling popcorn for a fundraiser at school. Each student needs to sell a minimum of 20 buckets of popcorn. Kimberly has sold 8 buckets so far.

Part A Write an inequality to represent the number of buckets, b, Kimberly still needs to sell.

Show your work.

Answer _____

Part B In the space below, draw a number line. Then graph the inequality on that number line. Give your graph a title.

Performance Task

Answer the questions and show all your work on separate paper.

Shawn makes bracelets using stone beads. He buys the beads for $0.30 each. The wire used to make each bracelet costs $0.10.

a. Write an expression to find the cost to make a bracelet with b beads.

b. One of Shawn's popular bracelets, the Charmer, includes 15 stone beads. Another bracelet, the Sparkler, uses 20 beads. How much does it cost to make each bracelet?

c. The Charmer bracelet sells for $8 and the Sparkler sells for $12. Write equations and make graphs to show the relationship between the number of each kind of bracelet Shawn sells and the money he makes.

d. Shawn has 2,400 beads to make bracelets for an upcoming craft fair. He can use all the beads to make the Charmer bracelet, all the beads to make the Sparkler bracelet, or he can make a combination of both. Consider the cost of making each kind of bracelet and the amount he makes from selling them. What kind and how many bracelets do you suggest that Shawn make for the craft fair? Justify your answer.

Checklist

Did You . . .

- ☐ Write and evaluate expressions?
- ☐ Use an equation to make a graph?
- ☐ Consider different options before making your suggestion?

Reflect

Reflect on Mathematical Practices After you complete the task, choose one of the following questions to answer.

- **Model** What are the different models you used to represent the relationships in this problem?
- **Reason Mathematically** What kind of reasoning did you use when you developed your suggestion for Shawn?