



Level 2: Expressions and Equations Pre-Test

Question 1:

A salon sells bottles of Hair Today shampoo and conditioner individually and as a combo package. The manager of the salon writes the following expression to determine total profit from the sale of shampoo and conditioner.

$$6(s + c) + 8s + 2c$$

Which of the following is an equivalent expression?

- a. $48s + 12c$
- b. $15s + 9c$
- c. $14s + 8c$
- d. $14s + 3c$

Question 2:

The manager of a bakery calculates the daily profits using the expression $4(x + 2) - (x - 7)$.

Which of the following is equivalent to this expression?

- a. $3x + 1$
- b. $3x + 9$
- c. $3x + 13$
- d. $3x + 15$

Question 3:

Diane runs a plumbing business. She estimates the cost of a plumbing job using the expression:

$$4(x + 3y) - 8 + \frac{3}{4}$$

Write an equivalent expression for the cost of the job without parentheses and with three terms.



Question 4:

A nurse is preparing a dose of medicine for a patient. He uses the weight in kilograms, w , of the patient in the expression below to determine the proper dosage.

$$0.4(w - 3) + 0.7w$$

How much does the dosage increase if the patient's weight increases by 1 kg?

Question 5:

A worker at a factory is mixing two batches of peanut butter.

- Batch 1 contains 75 gallons and is 97% whole peanuts.
- Batch 2 contains 30 gallons and is 90% whole peanuts.

Which computation could be used to determine the percentage of whole peanuts in the mixture?

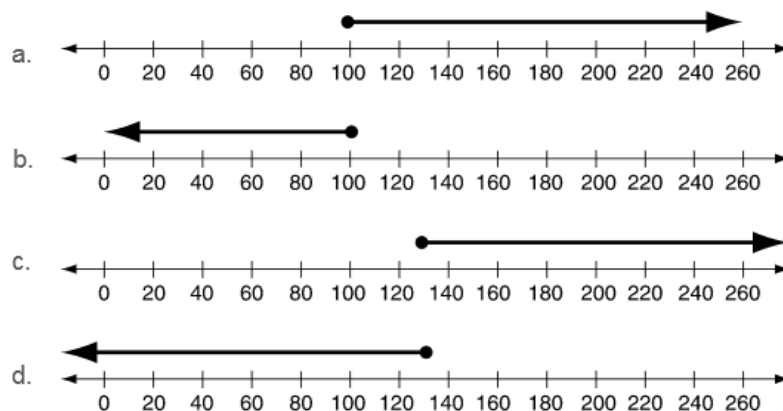
- Add the number of gallons in the two batches and divide by $(97 - 90)\%$.
- Add the amounts of whole peanuts in the two batches and divide by $(75 + 30)$.
- Add the number of gallons in the two batches and divide by the average of the two percents.
- Add the amounts of whole peanuts in the two batches and divide by the average of 75 and 30.

Question 6:

As a diver descends into sea water, the pressure increases by 1 atmosphere every 33 feet. This inequality can be used to determine d , the depth in feet of the diver at which the pressure is at least 4 atmospheres.

$$1 + \frac{d}{33} \geq 4$$

Which graph best represents the solution for d ?



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Question 7:

Two students compared their heights.

- Thomas is $62\frac{7}{8}$ inches in height.
- Molly is $65\frac{1}{4}$ inches in height.

What is the difference, in inches, in the heights of the two students? Write your answer as a mixed number in simplest form.

inches

Question 8:

Jason has c nickels.

- He has 5 more dimes than nickels and 2 more quarters than nickels.
- Jason writes the expression $0.05c + 0.10(c + 5) + 0.25(c + 2)$ to find the total value of his coins.
- He rewrites the expression as $0.40c + 1$.

Which statement explains how Jason can use the rewritten expression to find the total value of his coins?

- a. He can add \$0.40 and \$1 and multiply by the number of nickels.
- b. He can multiply the number of nickels by \$0.40 and then add \$1.
- c. He can add \$0.40 and \$1 and multiply by the total number of coins.
- d. He can multiply the total number of coins by \$0.40 and then add \$1.

Question 9:

A florist is arranging flowers in vases.

- She starts with 150 flowers.
- She puts 12 flowers in each vase.
- There are 42 flowers left over.

Which equation can be used to find the number of vases, v , that the florist uses?

- a. $12v + 42 = 150$
- b. $42v + 12 = 150$
- c. $12(v + 42) = 150$
- d. $42(v + 12) = 150$

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Question 10:

Troy is landscaping his yard.

- He spends a total of \$500.
- Troy spends \$160 on bricks.
- He spends the rest of the money on trees that cost \$20 each.
- Troy uses the equation $500 = 20t + 160$ to find the number of trees, t , he can buy.

What is the value of t ?

- a. 8
- b. 17
- c. 25
- d. 33

Question 11:

This equation can be used to find the number of hours, h , Jarrod rented a canoe when his total cost, c , was \$55.

$$6h + 25 = 55.$$

How many hours did Jarrod rent the canoe if his total cost, c , was \$73?

hours

Question 12:

Abby bought a shirt that was on sale for $\frac{1}{3}$ off the original price. She also had a coupon for 40% off any purchase. She spent \$14.40 on the shirt.

What was the original price of the shirt?

\$

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Question 13:

At a gym, Rachel pays a monthly fee of \$20 and \$5 for every exercise class she takes. Rachel can spend no more than \$50 each month at the gym.

Write an inequality that can be used to find the number of classes, c , Rachel can take each month.

Question 14:

The school football team needs to raise at least \$850 to buy new practice equipment. The team received a donation of \$125, and also earns \$4 for each ticket sold to their games.

Which inequality can be used to find the smallest number of tickets, t , that need to be sold for the team to have enough money for the new practice equipment?

- a. $125 + 4t \leq 850$
- b. $125 + 4t \geq 850$
- c. $4t - 125 \leq 850$
- d. $4t - 125 \geq 850$

Question 15:

Louise sold 873 copies of a book she wrote for \$10.99 each.

If she earns 52% profit from each book, about how much profit will she earn in all?

- a. \$4000
- b. \$5000
- c. \$6000
- d. \$7000