|  |
| --- |
| GED/HSE 23 |
| GED Practice Set 4 |
| 37-48 |

|  |
| --- |
| Kevin Adams |

1. What is the equation of the line that passes through the point and has a slope of ?

1. (b) We can use either the slope-intercept form or the point-slope formula to find the equation of the line described.

2. (c) The area of a rectangle is

We are given the length.

What times ?

Factor the quadratic:

What two factors of add up to ?

(Both factors will have to be negative.)

Or multiply by each option using FOIL.

3. We can’t take the square root of a negative number. What values for will make the expression less than zero?

Remember, we must reverse the inequality if we have multiplied or divided by a negative number!

(a)

(b)

(c)

(d)

2. The area of the rectangle shown is equal to the expression

The length of the rectangle, in terms of , is . Which of the following expressions is equal to the width of the rectangle, in terms of ?

(a)

(b)

(c)

(d)

3. For what value or values of is the following expression undefined in the set of real numbers?

(a) (b) (c) (d)

4. For every $8 in their budget, a garden club spends $3 on food for meetings. If the weekly budget is $704, how much is spent on food each week?

4. (d) Create a proportionate ratio and solve using cross-multiplication.

5. 5. (a) Convert the fraction into a decimal, and express as a percentage.

Or set up a ratio and solve using cross-multiplication.

(a) $88

(b) $192

(c) $235

(d) $264

5. Jack earned $954 in commission on a total of $15,900 in sales. What is his rate of commission?

(a)

(b)

(c)

(d)

1. Without using a calculator, subtract.

1. (d) Begin with the fractions. Find a common denominator:

We’ll need to *borrow* from the 5.

2. (d) First, we’ll need to find the slope, , of the line. Then we may use either the slope-intercept form or the point-slope formula to solve for the equation.

3. (b) We cannot have a denominator of zero. What values for will make this denominator equal zero?

This is a multiplication problem, and the product is zero. One of the values being multiplied *must* equal zero.

Either

or

(a)

(b)

(c)

(d)

2. What is the equation of the line that passes through the points and ?

(a)

(b)

(c)

(d)

3. What set of values for will make the following expression undefined in the set of real numbers?

(a)

(b)

(c)

(d)

4. Rosie put a down payment of $7,000 on a new car that cost $21,000. She took out a 60-month loan at simple interest to pay the balance.

4. (b) Find the formula for simple interest.

The principal, , of this loan is $14,000—the cost of the car *minus* the down payment.

The rate, , is

The time, , is 60 months5 years.

Calculate.

5. (d) Find a common denominator for the rational expression. There is one method that *always* works: use the denominator of each fraction as the **multiplier** for the other fraction.

At the end of the loan, how much interest will Rosie have paid?

(a) $1,487.50

(b) $2, 975.00

(c) $4,462.50

(d) $5,950.00

5. Add.

(a)

(b)

(c)

(d)

1. What is the value of in the solution to the system of equations shown below?

(a)

1. (b) Notice that we can eliminate the terms by subtracting.

2. (c) Find the formula for simple interest.

Since we’re solving for , use the principal of reflection to flip the equation around.

Substitute and solve for .

3. (d) The probability of rolling a 1 on one of the dice is one in six.

We need it to happen *two times*.

Multiply to find the combined probability.

(b)

(c)

(d)

2. Armando took out a loan of $5,000 at a simple interest rate of . When the loan was paid in full, he had paid a total of $1,312.50 in interest. How many years did Armando take to pay off the loan?

(a) 2

(b) 4

(c) 5

(d) 50

3. A pair of normal six-sided dice is being rolled. What is the probability that both dice will land on 1?

(a)

(b)

(c)

(d)

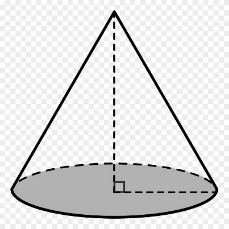
4. What is the surface area of the solid shown below?

4. (c) Find the formula for the surface area of a cone.

The radius of this cone, , is half of its diameter.

To find the slant height, , we’ll need to use the Pythagorean Theorem.

5. (c) We do not know the score of the third game, but we do know that the average of *all three* must be 210.

(a)

(b)

(c)

(d)

5. Jack is bowling three games. He’ll win a prize if his average score on the three games is at least 210.

The first two games, he scored a 187 and a 223.

What must be Jack’s minimum score on the third and final game if he wants to win the prize?

(a) 210

(b) 215

(c) 220

(d) 225

1. Without a calculator, divide.

1. (c) Set up the problem as long division.

Move the decimal in each value one place to the right.

Divide as normal. The decimal on the answer bar will be directly above the decimal in the problem.

2. (a) Look at our equation.

We’re looking for the line which crosses the -axis at , so it is either choice A or D.

The slope of our line is positive, so we’re looking for the line which goes uphill from left to right.

(a)

(b)

(c)

(d)

2. Which line on the coordinate plane corresponds to the equation given?

 **A**

**B**

**C**

**D**

3. Solve for .

3. (d) To solve a quadratic equation, it must be set to zero.

We can factor out a 3 from each term.

Is there a factor pair of 10 that adds up to 7?

2 and 5 are our magic numbers.

4. (c) PEMDAS!

5. (a) Begin with the **constants**—the “normal numbers.” They all share a factor of 3, which we can cancel out.

We can also cancel 2 powers of and .

(a)

(b)

(c)

(d)

4. Without a calculator, evaluate the following expression.

(a)

(b)

(c)

(d)

5. Simplify.

(a)

(b)

(c)

(d)

1. Rodrigo is building a model ship. He has one piece of decal tape that is inches long. In order to finish the model, he needs to cut the tape into pieces that are exactly inches long each. How many pieces of tape will Rodrigo have?

1. (d) This is a division problem.

First, convert the mixed number to an improper fraction. Then, ***multiply by the inverse***.

Notice that we can cancel out factors before doing the multiplication problem.

2. The volume of a cube is

All the sides of a cube are equal.

Find the cubic root of .

3. (b) We’re given two values of . They equal each other.

Solve for .

Now substitute into either equation to solve for .

(a)

(b

(c)

(d)

2. A cube has a surface area of 1,944 square units and a volume of 5,832 cubic units. What is the length, in units, of each side?

(a) 16

A calculator with many buttons

Description automatically generated with medium confidence(b) 17

(c) 18

(d) 19

3. What is the ordered pair that represents the solution to this system of equations?

(a)

(b)

(c)

(d)

4. A caterer charges a flat rate fee of $125.00, plus an additional $25.00 per guest. How much will the caterer charge for an event that has 240 guests?

4. (c)

5. ( The “solution” to a system of equations is the point, or **ordered pair**, where the lines intersect one another.

Find the point where the lines intersect.

It is .

The value for is .

(a) $600.00

(b) $6,000.00

(c) $6,125.00

(d) $8,125.00

5. What is the value of in the solution to the system of equations shown on the graph below?



1. Divide.

1. (a) Treat this rational expression like a normal fraction. Dividing by a fraction is really ***multiplying by the inverse***.

2. We can convert the fractions into decimals by division.

3. (b) How much did the house increase in value? $60,000.

Create a ratio, and solve using cross-multiplication. **Always compare the amount of increase or decrease to the original amount.**

(a)

(b)

(c)

(d)

2. Arrange the following terms in order from least to greatest.

3. Five years ago, Jeanette bought a house for $150,000. The house is now worth $210,000.

What is the percentage increase in the value of Jeanette’s house?

(a)

(b)

(c)

(d)

4. Which set below represents the possible values of in the solution to the equation shown?

4. (d) We’ll need to use the quadratic formula.

First, set the equation to zero.

Write down the formula.

Calculate the **discriminant**.

Take the square root of 81.

5. (d) One definition of distance is *the absolute value of the difference between two points.*

Distance is **never** negative.

The **difference** of the two points we’re shown is either

or

The **absolute value** of both and is the same.

(a)

(b)

(c)

(d)

5. Which expression below represents the distance between the two points shown on the number line?



(a)

(b)

(c)

(d)

1. Which graph on the number line shows the solution to the inequality?



(a)



(b)



(c)



(d)

2. Breanna earns $12 per hour and, in addition, receives a 20% commission on the dollar value of her sales. Which inequality could be used to solve for the dollar value of sales, , she would need to have over a 30-hour week to earn more than $600 for that week?

(a)

(b)

(c)

(d)

3. Which set of values for will make this expression undefined in the set of real numbers?

1. (d) Solve for .

2. (c) She makes $12/hr 30 hrs:

In addition, she earns 20% of sales. Here, her sales are represented by . To find 20% of , we convert the percentage to its decimal form and multiply.

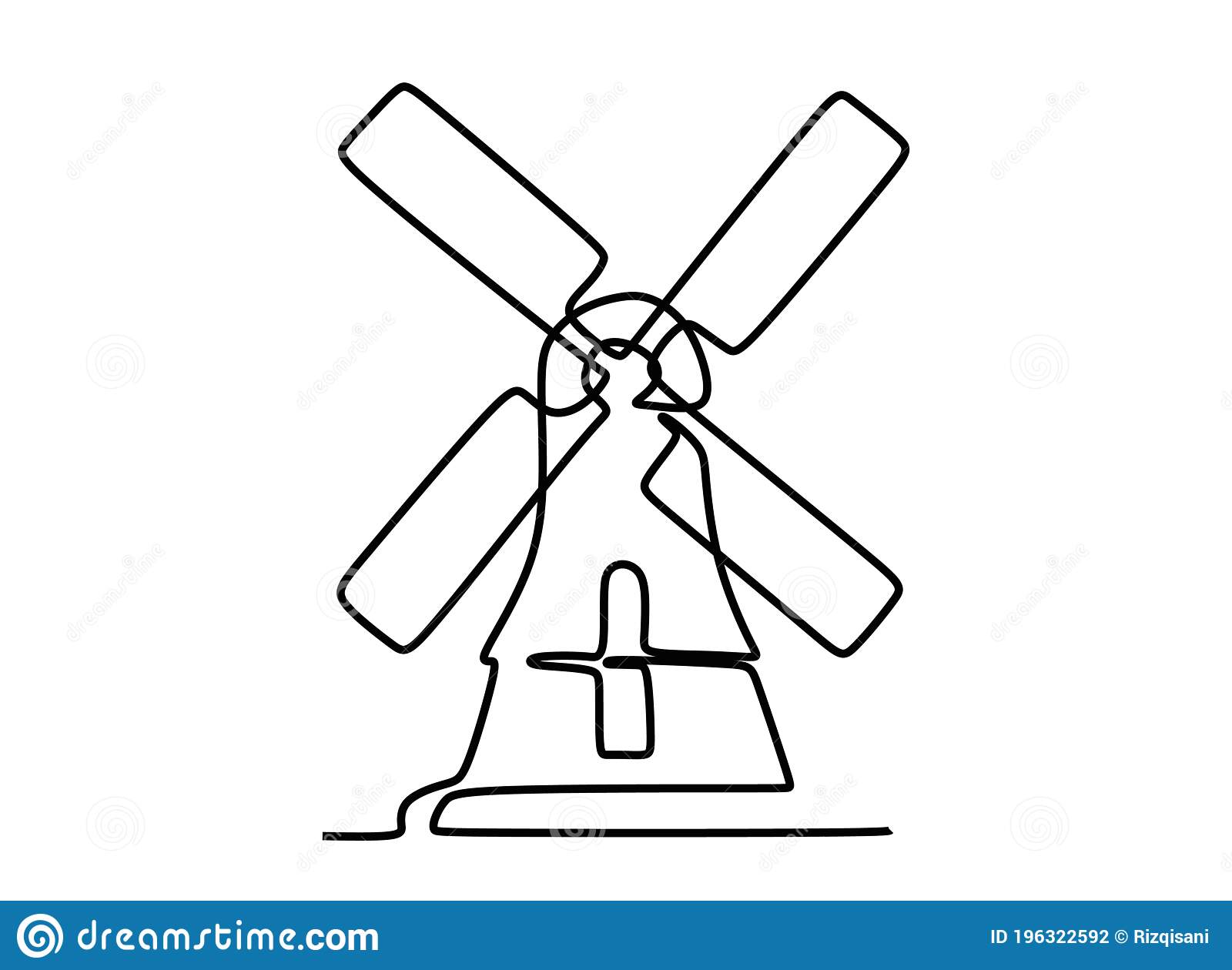
Her total earnings must be greater than $600.

3. (d) We cannot have a denominator of zero. What values for will make this denominator equal to zero?

Either or

(a) (b)

(c) (d)



4. The outer edge of the turbine will describe a circle as it rotates. What is the distance around that circle? We need to find the **circumference**. Here, the radius is 21.

5. (d) How many minutes are in an hour? 60.

How many rotations per minute? 4.

A wind turbine has 4 blades that turn in a circular pattern.

Each blade is 21 feet in length, measured from the center to the outer edge.

4. Rounded to the nearest foot, how far will the outer edge of each blade move when the wind turbine makes one complete rotation ?

(a) 66

(b) 132

(c) 264

(d) 1385

5. On a very windy day, the turbine made 4 complete rotations every minute. How many rotations did it make in 3 hours?

(a) 12

(b) 45

(c) 240

(d) 720

1. Solve the equation for .

1. (d) Set the equation to zero and write the values for and .

Write the formula.

Calculate the discriminant:

Calculate the square root:

Substitute into the formula.

Cancel the 2 from each term.

2. (c) Begin with the numbers. They are all even. We can extract a 2 from each.

How many powers of do all of the terms share? 1

How many powers of ? 2

How many powers of ? 1

3. (b) We cannot take the square root of a negative number. What values for will make the expression under the radical ***less than zero***?

Remember to reverse the inequality. Why? Because we divided both sides by a negative number.

(a)

(b)

(c)

(d)

2. Which expression below represents the full factorization of this polynomial?

(a)

(b)

(c) )

(d)

3. Which values for will make this expression undefined in the set of real numbers?

(a)

(b)

(c)

(d)

4. Amanda is hanging five paintings in five spots on a wall. How many different arrangements of the five paintings can Amanda make?

4. (c) There are five paintings to choose from, and five spaces for them.

How many ways can she choose the first painting? 5.

How about the second? 4.

Third? 3.

Fourth? 2.

Fifth? Only 1 left.

Use the Counting Principle to calculate how many ways in all.

5. (b) We can extract a 2 from each term.

Now, we can factor the quadratic. We need a factor pair of that adds up to . We know that one of the pair must be negative. Since they add up to a positive number, the larger number of the pair will be positive.

and are our magic numbers.

6. (d) To subtract a polynomial, turn it into an addition problem and convert each term being subtracted into its opposite.

Now, combine like terms.

(a) 15

(b) 25

(c) 120

(d) 3125

5. What are the factors of this expression?

(a) , , and

(b) , , and

(c) , , and

(d) , , and

6. Subtract.

(a)

(b)

(c)

(d)

1. What is the equation of the line which passes through the point and has a slope of ?

1. (c) We can use either the slope-intercept form or the point-slope formula to determine the equation for this line.

2. (c) Our line crosses the y-axis at .

Our line is going *downhill* from left to right. It has a negative slope.

Between any two points on the line, it is going downhill at exactly the rate of

(a) (b)

(c) (d)

2. Which equation represents the line shown on the graph?

(a) (b)

(c) (d)

3. **Without using a calculator**, divide.

(a) (b)

(c) (d)

**A**

**B**

**C**

**D**

4. Which line represents the equation ?

4. (a) We’re given the equation of a line in slope-intercept form.

The slope, , of this line is . We are looking for a line that is going *downhill* from left to right at exactly the rate of

between any two points.

The intercept, , of this line is . We are looking for the line which crosses the axis at .

Our line is (a).

5. (b) We are given the equation of two lines.

We can substitute the value for in the second equation into the first equation.

When we subtract the binomial, turn it into an addition problem and convert both terms inside the parentheses into their opposites.

6. (b) Treat these rational expressions like fractions. To divide by a fraction, multiply by its inverse.

We can cancel before multiplying.

5. What is the value of in the solution to the system of equations?

(a) (b)

(c) (d)

6. Divide.

(a) (b)

(c) (d)

1. Find the equation of the line which passes through the point and has a slope of .

1. (a) We can use either the slope-intercept form or the point-slope formula to find the equation of this line.hh

Now, we’ll need to move things around until our equation is in standard form.

We’re not allowed to have a fraction in front of the term. We can get rid of it by multiplying the entire equation by whatever the denominator is.

2. (c) We can find any two points on the line and see if they make the equations true. It’s easiest to use intercepts, where one of the values is zero!

(a) . Nope.

(b) . Nope.

(c) . Yep.

Let’s check it against the second point, just to make sure.

(c) . Yep.

We can also find the slope intercept form and convert it into standard form.

The term can’t be negative. Multiply the entire equation by .

3. (b) Set up as a normal multiplication problem. Move the decimal point the total number of spaces in the original problem.

(a) (b)

(c) (d)

2. Which equation represents the line shown on the graph?



(a) (b)

(c) (d)

3. **Without using a calculator**, multiply.

(a) (b)

(c) (d)

4. (b) Convert the equation of the line into slope-intercept form.

We’re looking for a line that crosses the axis at , and is going *uphill* from left to right at the rate of

Our line is clearly (b).

5. (b) Is there any way we can use elimination to make this problem easier? We’re allowed to multiply entire equations!

6. (c) Use the denominator of each fraction as the multiplier for the other.

**A B**

**C**

**D**

4. Which line represents the equation ?

5. What is the value of in the solution to the system of equations?

(a) (b)

(c) (d)

6. Add.

(a) (b)

(c) (d)

1. Pioneer Bank has steps leading up to its main entrance. Broadway Bank has three fewer steps than Pioneer Bank. Balcones Bank has five times the number of steps as Broadway Bank. Which expression represents, in terms of , the number of steps that Balcones Bank has?

1. (b) Use scratch paper to keep track!

Pioneer: steps.

Broadway: steps.

Balcones: steps.

2. (a) The magic word is **combinations**. We’ll make a table and count up the total. Name the items (here, they are movies) with letters.

a b c d e f

ab bc cd de ef

ac bd ce df

ad be cf

ae bf

af

5 + 4 + 3 + 2 + 1 = 15

3. (c) There are six movies, but only three places.

How many options for first place? 6.

How many for second place? 5.

How many for third place? 4.

We’ll use the Counting Principle to find out the total number of ways the movies can place:

(a)

(b)

(c)

(d)

At the San Marcos Film Festival, six movies are being premiered. A day-pass allows an attendee to watch all six movies. A student pass allows the customer to watch any two out of the six movies.

2. Mike has a student pass. How many different combinations of the movies can he choose from?

(a) 15

(b) 30

(c) 120

(d) 720

3. Awards are being handed out for first, second, and third place movies. How many different ways can the movies place first, second, and third?

(a) 15

(b) 30

(c) 120

(d) 720

4. A bag contains 15 marbles. 6 of the marbles are clear. If you choose two marbles at random, what is the probability that they will both be clear?

4. (b) When we draw the first marble, there is a 6 in 15 chance that it will be clear.

Now keep in mind that we’re assuming we’ve drawn one of the clear marbles! When we draw the second marble, there would only be 5 clear marbles remaining out of 14 total marbles, so the chance will be 5 in 14.

We need the thing to happen two times, so we’ll use the Counting Principle and multiply to find the total probability.

We can cancel before multiplying.

5. (c) Set the quadratic equation equal to zero, and find the values of , , and .

Write the quadratic formula.

Calculate the discriminant.

Take the square root.

Substitute and reduce.

6. (c) Can’t let this confuse us! It’s a multiplication problem. The entire first binomial is being squared.

When we’re multiplying the same base with exponents, we add the exponents together.

(a) (b)

(c) (d)

5. Solve for .

(a)

(b)

(c)

(d)

6. Simplify the expression.

(a)

(b)

(c)

(d)

1. A shipping box in the shape of a rectangular prism has a volume of cubic units. The length of the box is five less than . The width of the box is one more than . What value or values for will make the height of the box undefined in the set of real numbers?

1. (c) The formula for the volume of a rectangular prism is .

We can’t have a denominator of zero. What values for will make this denominator equal zero?

Either or

2. (d) She walked for hours at a constant rate of .

Distance=the rate multiplied by time.

We need to find a factor pair of whose sum is . The larger number will be negative.

Our magic numbers are and .

Time isn’t negative, so the answer is 6.

3. (19)

(a) only

(b) and

(c) and

(d) and

2. Silas walked 30 miles at a rate of miles per hour. The number of hours she walked was one less than . How many hours did Silas walk?

(a)

(b)

(c)

(d)

3. Calculate. Insert your answer into the box.



A calculator with many buttons

Description automatically generated with medium confidence

4. Which point on the number line represents the solution to the equation?

4. (b) Solve for .

The number line is in *tenths*. You may convert the fraction into its decimal form by using division OR by finding an equivalent fraction.

5. (a)

6. (a) The formula for the area of a rectangle is

Multiply the binomial using FOIL.

FIRST:

OUTSIDE:

INSIDE:

LAST:

Chart, box and whisker chart

Description automatically generated

**A B C D**

5. A wholesaler charges $51.84 for a case of chocolate pieces. Each case contains 12 boxes. Each box contains 24 pieces.

What is the cost per piece of chocolate?

(a) $0.18

(b) $0.32

(c) $1.37

(d) $4.32

6. A rectangle has a length of and a width of . Which expression represents the area of the rectangle?

(a)

(b)

(c)

(d)

1. Which algebraic inequality below represents the following description?

1.

*Three times the difference of a number and one is greater than or equal to five times the sum of the same number and one*?

(a)

(b)

(c)

(d)

2. Nestor was attempting to solve the following linear inequality. On which step did he make a mistake?

(a) Step One

(b) Step Two

(c) Step Three

(d) Step Four

3. Which number line represents the solution to the inequality?

(a)



(b)



(c)



(d)

4. What is the value of in the solution to the system of equations?

(a)

(b)

(c)

(d)

5. Solve for .

(a)

(b)

(c)

(d)