

Test 3Dusty Wilson
Math 085Name: KEY

Why are numbers beautiful? It's like asking why is Beethoven's Ninth Symphony beautiful. If you don't see why, someone can't tell you. I *know* numbers are beautiful. If they aren't beautiful, nothing is.

No Calculators**No work = no credit.**

Paul Erdős (1913 - 1996)
Hungarian mathematician

Warm-ups (1 pt each): $(-2)^2 = \underline{4}$ $-2^2 = \underline{-4}$ $\frac{0}{2} = \underline{0}$

1.) (2 pts) Given the sets P , Q and R below, determine whether the following statements are true or false.

$P = \{3, 5, 7, 9, 11\}$

$Q = \{1, 2, 3, 6, 9, 12, 15\}$

$R = \{1, 2, 6, 15\}$

a) $P \subset Q$ F

d) $12 \in R$ F

b) $Q \subset P$ T

e) $R \subset Q$ T

c) $3 \notin P$ F

2.) (2 pts) Find: $|-5| - |4^2|$

$5 - 16$

-11

3.) (2 pts) Simplify: $7a - 12 - 4a + 16$

$3a + 4$

4.) (2 pts) Find the value of the numerical expression: $54 \div [3 - (2 \cdot 3)]$

$= 54 \div [3 - 6]$

$= 54 \div (-3)$

$= 18$

18

5.) (2 pts) Simplify the expression:

$8(x + 3) - 7x(y + 2)$

$= 8x + 24 - 7xy - 14x$

$= -6x - 7xy + 24$

$-6x - 7xy + 24$

6.) (2 pts) Evaluate the expression $4x + 3y - 7$ when $x = 3$ and $y = -2$.

$$\Rightarrow 4(3) + 3(-2) - 7$$

$$= 12 - 6 - 7$$

-1

7.) (2 pts) Simplify the expression:

$$7(x+3) + 2(9-x)$$

$$= 7x + 21 + 18 - 2x$$

$5x + 39$

8.) (2 pts) Simplify the expression by using the distributive property and combining like terms.

$$y(3-y) + 5(x+y^2) - x(2-7y)$$

$$= 3y - y^2 + 5x + 5y^2 - 2x + 7xy$$

$$\underline{3x + 3y + 4y^2 + 7xy}$$

9.) (2 pts) Circle the true statement(s):

$9 \neq 4$

$7 \geq 7$

$11 < 13$

$-8 > -5$

10.) (2 pts) When $x = -1$ and $y = 2$, evaluate:

$$4x^2y + y - 5xy^2 - 15$$

$$\Rightarrow 4(-1)^2(2) + 2 - 5(-1)(2)^2 - 15$$

$$= 4(1)(2) + 2 + 5(4) - 15$$

$$= 8 + 2 + 20 - 15$$

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11.) (2 pts) Solve the equation for x :

$$12x - 13 = 7x + 2$$

$$5x = 15$$

$x = 3$

12.) (2 pts) Solve the equation for y :

$$5y + 3y - 4y = 10 + 2$$

$$4y = 12$$

$y = 3$

13.) (2 pts) Solve for y : $2(y - 10) = 10 + 2y$

$$2y - 20 = 10 + 2y$$

$$-20 = 10$$

No solution

14.) (2 pts) Solve for y : $2y + 3x = 5$

$$\Rightarrow 2y = 5 - 3x$$

$$\Rightarrow y = \frac{5 - 3x}{2}$$

$$\underline{y = \frac{5 - 3x}{2}}$$

15.) (2 pts) Solve for z : $\frac{1}{4}(z+3) = 2$

$$\Rightarrow 4 \cdot \frac{1}{4}(z+3) = 2 \cdot 4$$

$$\Rightarrow z + 3 = 8$$

$$\underline{z = 5}$$

16.) (2 pts) Solve for x : $4(x+3) = -5(3x-10)$

$$\Rightarrow 4x + 12 = -15x + 50$$

$$\Rightarrow 19x = 38$$

$$\underline{x = 2}$$

17.) (2 pts) Solve for b : $\frac{3}{8}(b+4) = \frac{3}{4}$

$$\Rightarrow 8 \cdot \frac{3}{8}(b+4) = 8 \cdot \frac{3}{4}$$

$$\Rightarrow 3(b+4) = 6$$

$$\Rightarrow 3b + 12 = 6$$

$$\Rightarrow 3b = -6$$

$$\underline{b = -2}$$

18.) (2 pts) If $a = 6$ and $b = 8$, use the Pythagorean Theorem to find c . See the corresponding figure.

$$6^2 + 8^2 = c^2$$

$$36 + 64 = c^2$$

$$100 = c^2$$

$$\underline{c = 10}$$

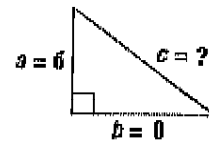


Figure for problem (18.)

19.) (2 pts) Find: $3^2 \cdot 2^3$

$$9 \cdot 8$$

$$\underline{72}$$

20.) (2 pts) Rewrite using exponents:

$$3 \cdot 3 \cdot 3 \cdot 3 \cdot 7 \cdot 7 \cdot 7$$

$$\underline{3^4 \cdot 7^3}$$

21.) (3 pts) Use the following graph to answer the next three questions

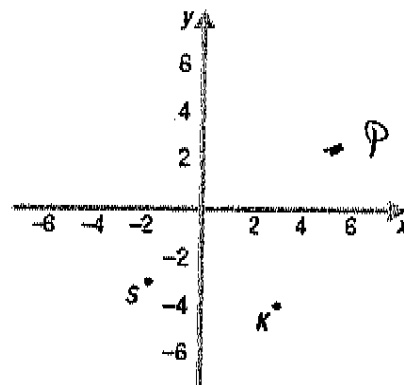


figure for problem (21.)

a.) Find the coordinates of point K

(3, -4)

b.) Plot the point P(5, 2.5)

c.) In what quadrant does the point S(-2, -3) lie?

III

22.) (2 pts) Solve for x: $-\frac{2}{3}(1-4x) = \frac{2}{9}(5x+4)$

$$\Rightarrow 9 \cdot \left(-\frac{2}{3}\right) (1-4x) = 9 \cdot \frac{2}{9} (5x+4)$$

$$\Rightarrow -6(1-4x) = 2(5x+4)$$

$$\Rightarrow -6 + 24x = 10x + 8$$

$$14x = 14$$

$$\underline{x = 1}$$

23.) (2 pts) Find the rise and the run in moving from point P₁(1, -5) to P₂(7, 5).

Rise: 10 Run: 6

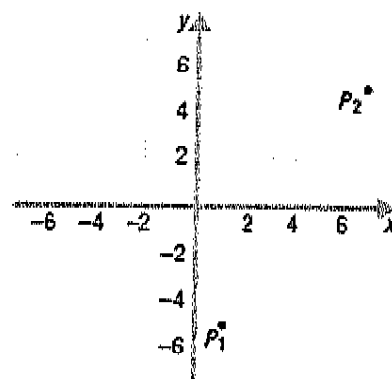


figure for problems (23.) and (24.)

24.) (2 pt) Starting at point P₁, find the coordinates of a possible point P₃ if the run from P₁ to P₃ is -4. (There is more than one correct result).

Coordinates: (-3, y) (any y)

25.) (2 pts) Find the distance between the points (1, -11) and (-2, -7).

$$D = \sqrt{(-2-1)^2 + (-7-(-11))^2}$$

$$= \sqrt{3^2 + 4^2}$$

$$= \sqrt{25}$$

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