

Name: Key

2018 M-Step – Grade 8 – Mathematics Practice Test Answer Sheet

Open Google Chrome and type the following URL:

<http://wbte.drctdirect.com/MI/portals/mi>

Click on: MSTEP Online Training Tools

Sample Item Sets (Click Here)

Grade 8

Mathematics

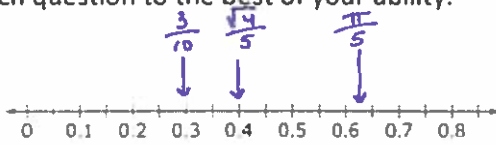
Username: math8samp

Password: test1234

Follow the directions and use the following answer sheet to record your solutions to the Mathematics Grade 8 Sample Items.

Answer each question to the best of your ability.

1.



$$\frac{3}{10} = .3 \quad \frac{\sqrt{4}}{5} = \frac{2}{5} = \frac{4}{10} = .4 \quad \frac{\pi}{5} \approx \frac{3.14}{5} \approx \frac{6.28}{10} \approx .628$$

2. $\frac{4}{7}$ Rational; $\sqrt{30}$ Irrational; $\frac{21}{\sqrt{4}}$ Rational; π Irrational; -27 Rational

3. $\sqrt{5^2} = 324 \quad 5 = 18$

4. C. $6.45 \cdot 10^{10}$

$$\begin{array}{r} 7.5 \\ \times 8.6 \\ \hline 64.5 \end{array}$$

$$7.5 \cdot 10^5 \cdot 8.6 \cdot 10^4 \dots$$

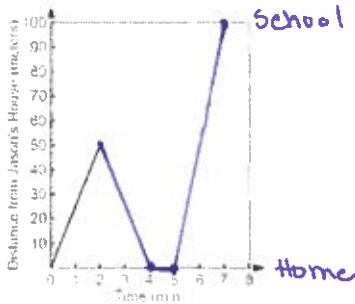
$$7.5 \cdot 8.6 \cdot 10^5 \cdot 10^4$$

$$64.5 \cdot 10^9$$

$$6.45 \cdot 10^{10}$$

$$\frac{\text{gal}}{\text{sec}} \cdot \frac{\text{sec}}{\text{day}} = \frac{\text{gal}}{\text{day}}$$

5.



6. $y = -\frac{1}{3}x$

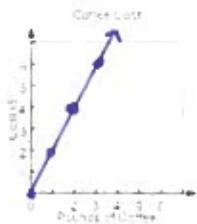
$y = mx + b$ - y-int

Slope = $\frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x}$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - -2}{-6 - 6} = \frac{4}{-12} = -\frac{1}{3}$$

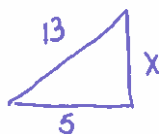
$(-6, 2) \quad (6, -2)$

7.



$$\frac{\$2.00}{1 \text{ lb}} \quad \frac{\Delta y}{\Delta x}$$

8.



$$x^2 + 5^2 = 13^2$$

$$x^2 + 25 = 169$$

$$x^2 = 144$$

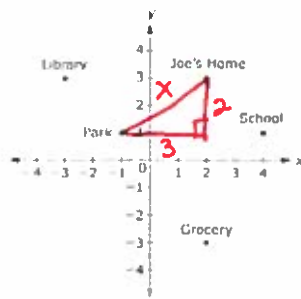
$$\sqrt{x^2} = \sqrt{144}$$

$$x = 12$$

12 feet

Places in Joe's Town

9.



$$x^2 = 3^2 + 2^2$$

$$x^2 = 9 + 4$$

$$x^2 = 13$$

$$\sqrt{x^2} = \sqrt{13}$$

$$x \approx 3.6 \text{ miles}$$

10.

$$V = \frac{1}{3} \pi r^2 \cdot h$$

$$165 = \frac{1}{3} \pi (4)^2 \cdot h$$

$$165 = \frac{16\pi}{3} \cdot h$$

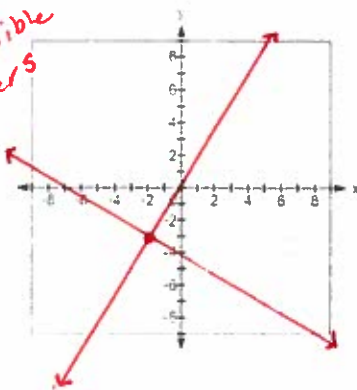
$$\frac{3}{16\pi} \cdot 165 = \frac{3}{16\pi} \cdot \frac{16\pi}{3} \cdot h$$

$$\frac{495}{16\pi} = h$$

$$9.85 \text{ ft} \approx h$$

11.

many possible answers



Any two linear lines that only cross at (-2, -3)

12. D

Solve \Rightarrow no variable but true = Infinite # of Solutions
 Solve \Rightarrow no variable but false = No Solution

13. $8x - 3x + 2 - x = \underline{\quad}x + \underline{\quad}$

$4x + 2 = \underline{4}x + \underline{\quad} \leftarrow$ Any # but 2

14. Translations and reflections produce congruent figures. So the segment will not change length.

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$D = \sqrt{(-2 - -2)^2 + (4 - 3)^2}$$

$$D = \sqrt{(0)^2 + (1)^2}$$

15. Greater area \Rightarrow polygon grew
 "B"
 "D" So dilations with scale factor > 1 .

$$D = \sqrt{49}$$

$$D = 7 \text{ units}$$

16.

Rate of Change for graph = slope = $\frac{\text{rise}}{\text{run}} = \frac{2}{1} = 2$

$$y = mx + b$$

/

Slope

A

17. If $a = b$ then $C = ax - bx$

Name: _____

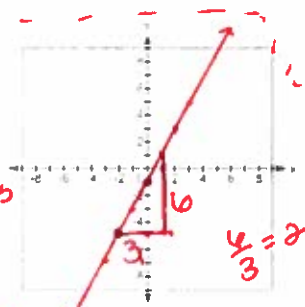
$C = 0$

If $C = 0$, then infinite
If $C \neq 0$, then no solution

"B" "C"

18.

many possible answers



$\frac{3}{2} = 2$

John's Rate of Change

$$\begin{array}{c|c} \Delta x & \Delta y \\ \hline +2 & -1 \\ +2 & 3 \end{array} \quad \begin{array}{c} -5 \\ -1 \\ 3 \end{array} \quad \begin{array}{c} +4 \\ +4 \end{array}$$

$\frac{\Delta y}{\Delta x} = \frac{4}{2} = 2$

Any line with a slope of 2.

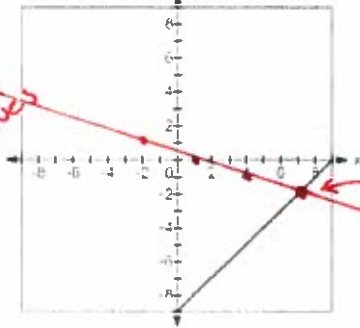
19. $m\angle 3 > m\angle 7$ and $m\angle 1 + m\angle 2 < m\angle 5 + m\angle 6$

$m\angle 4 < m\angle 8$

many possible answers

20.

Line must cross y-axis in positive



lines must cross here

$\angle 4 + \angle 3 = 180$ $\angle 7 + \angle 8 = 180$
 $\angle 1 + \angle 2 = \angle 4$ $\angle 5 + \angle 6 = \angle 8$

Slope of b is between 0 and -1

↳ goes down hill
so $-\frac{2}{3}, -\frac{1}{2}, -\frac{1}{3} \dots$

21.

$\frac{\Delta \text{Water level}}{\Delta \text{Time}} = \frac{50 - 40}{0 - 2} = \frac{10 \text{ ft}}{-2 \text{ hr}} = -\frac{5 \text{ ft}}{1 \text{ hr}}$

22.

$V = \pi r^2 \cdot h$
 $V = \pi (9.5)^2 \cdot 32$
 $V = 2888 \pi \text{ ft}^3$
 $\approx 9068.32 \text{ ft}^3$

Fill Rate: $\frac{\Delta \text{Amount}}{\Delta \text{Hours}} = \frac{2475 - 0}{3 - 0} = \frac{825 \text{ ft}^3}{1 \text{ hour}}$

After 10 hr: $\frac{825 \text{ ft}^3}{1 \text{ hr}} \cdot \frac{10 \text{ hr}}{1} = 8250 \text{ ft}^3$

23. Total cost of 10% off \$90 = $90 \cdot (1 - .1) = \$81$
C

Percent Filled: $\frac{8250 \text{ ft}^3}{9068.32 \text{ ft}^3} \approx 0.90976$
90.98%

24.

	MP3 Player	No MP3 Player	Total
Cell Phone	57	122	179
No Cell Phone	30	65	95
Total	87	187	274

25.

$\frac{\Delta y}{\Delta x} = \frac{\$6}{1 \text{ wk}}$ A

26. $3(2x + 5) = 6x + 15$

27.



$12 \text{ in} = 1 \text{ ft}$

$\frac{12 \text{ in}}{1} \cdot \frac{1 \text{ ft}}{12 \text{ in}}$

$18 \text{ in} = 1 \frac{1}{2} \text{ ft}$

$24 \text{ in} = 2 \text{ ft}$

$27 \text{ in} = 2 \frac{1}{4} \text{ ft}$

$30 \text{ in} = 2 \frac{1}{2} \text{ ft}$

$21 \text{ in} = 1 \frac{3}{4} \text{ ft}$

28.

$\frac{1}{2}(c + 6) = 7$

Step 1: $\frac{1}{2}c + 3 = 7$

Step 2: $\frac{1}{2}c = 7 - 6$

Step 3: $\frac{1}{2}c = 13$

Step 4: $c = 13 \cdot 2$

Step 5: $c = 6 \frac{1}{2}$

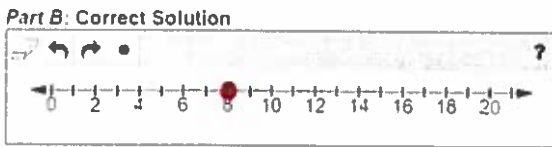
$\frac{1}{2}(c + 6) = 7$

$\frac{1}{2}c + 3 = 7$

$\quad -3 \quad -3$

$2 \cdot \frac{1}{2}c = 4 \cdot 2$

$c = 8$



Reflection

- A. I feel more prepared now to take the M-Step Math Test. Agree Disagree
 Why?
- B. I feel comfortable with the M-Step calculator. Agree Disagree
 Why?
- C. The M-Step Math Test makes me feel _____ because...