

BLUE PRACTICE TEST SOLUTIONS

#1. $\frac{3}{2} = \frac{15}{c}$ so $\frac{3c}{3} = \frac{30}{3}$ $\boxed{c=10}$ so $\frac{15}{10} = \frac{10-d}{4}$
 $60 = 10(10-d)$
 $60 = 100 - 10d$
 $-40 = -10d$
 $-10 = -10$

$\boxed{4=d}$

check $\frac{3}{2} \stackrel{?}{=} \frac{15}{10} \stackrel{?}{=} \frac{10-4}{4}$
 $\frac{3}{2} = \frac{3}{2} = \frac{6}{4}$
 $\frac{3}{2} = \frac{3}{2} = \frac{6}{4} \checkmark$

#2. $5|g| - (4 - 3|g|) = 20$

check:

$5|g| - 4 + 3|g| = 20$

* if $g=3$:

$8|g| - 4 = 20$

$5|3| - (4 - 3|3|) \stackrel{?}{=} 20$

$8|g| - 4 + 4 = 20 + 4$

$15 - (4 - 9) = 20$

$\frac{8|g|}{8} = \frac{24}{8}$

$15 - (-5) = 20$

$20 = 20 \checkmark$

$|g| = 3$

* if $g=-3$:

$\boxed{g = 3 \text{ or } -3}$

$5|-3| - (4 - 3|-3|) \stackrel{?}{=} 20$

$15 - (4 - 9) = 20$

$15 - -5 = 20$

$20 = 20 \checkmark$

#3. $19 - 3(v-5) = 4v + 2(7-v)$

$19 - 3v + 15 = 4v + 14 - 2v$

check: $19 - 3(4-5) \stackrel{?}{=} 4 \cdot 4 + 2(7-4)$

$34 - 3v = 2v + 14$

$19 - 3(-1) = 16 + 2(3)$

$34 = 5v + 14$

$19 - -3 = 16 + 6$

$\frac{20}{5} = \frac{5v}{5}$

$22 = 22 \checkmark$

$\boxed{4=v}$

#4. $\frac{x}{1} \left(\frac{2}{x} - 4 \right) = \left(\frac{3}{x} \right) \frac{x}{1}$

check: $2 \div \frac{1}{4} - 4 \stackrel{?}{=} 3 \div \frac{1}{4}$

$2 - 4x = 3$

$2 \cdot \frac{4}{1} - 4 = 3 \cdot \frac{4}{1}$

$-4x = 1$

$-8 - 4 = -12$

$\boxed{x = -\frac{1}{4}}$

$-12 = -12 \checkmark$

#5. $t \cdot a = \left(\frac{v-u}{t} \right) \cdot \frac{t}{1}$

check: $a \stackrel{?}{=} \frac{v-(v-ta)}{t}$

$a \stackrel{?}{=} \frac{v-v+ta}{t}$

$ta - v = v - v$

$ta - v = -v$

$a = \frac{ta}{t}$

$\boxed{v-ta=0}$

$a=a \checkmark$

★ PART 2 ★

#6. Let $x =$ the percent Jolene must earn on her 3rd test.

$\frac{74+96+x}{3} = 90.3$

check

$\frac{74+96+100}{3} \stackrel{?}{=} 90$

$74+96+x = 270$

$170+x = 270$

$\frac{270}{3} \stackrel{?}{=} 90$

$\boxed{x=100}$

$90=90 \checkmark$

★ She must earn 100% on her 3rd test ★

#7. An isosceles triangle has 2 sides that are the same length. One possible triangle has 2 sides measuring $x+10$ units, which gives us the equation $(x+10) + (x+10) + (x+40) = 420$.

$3x + 60 = 420$

$3x = 360$

so $\rightarrow x = 120$

The other possible triangle has 2 sides measuring $x+40$ units, which gives us the equation $(x+10) + (x+40) + (x+40) = 420$

$3x + 90 = 420$

$3x = 330$

so $\rightarrow x = 110$

The sum of both possible values of x is $120+110 =$

$\boxed{230}$

#8. Let $x =$ the number

$$x - \frac{2}{5}x = \frac{1}{2}x + 1$$

$$10 \cdot \left(\frac{3}{5}x\right) = \left(\frac{1}{2}x + 1\right) \cdot 10$$

$$6x = 5x + 10$$

$$x = 10$$

The number is 10.

check

$$10 - \frac{2}{5}(10) \stackrel{?}{=} \frac{1}{2}(10) + 1$$

$$10 - 4 = 5 + 1$$

$$6 = 6 \checkmark$$

#9. Let $x =$ the number of hours that have passed

$$38 - 1.7x = 25 + 2.1x$$

$$\frac{13}{3.8} = \frac{3.8x}{3.8}$$

$$3.42 \approx x$$

check:

$$38 - 1.7(3.42) \stackrel{?}{=} 25 + 2.1(3.42)$$

$$38 - 5.814 \approx 25 + 7.182$$

$$32.186 \approx 32.182 \checkmark$$

After about 3.42 hours or 3 hours 25.2 minutes

#10. A. Let $x =$ the number of days that have passed

$$250 - 3x = 160$$

$$\frac{90}{3} = \frac{3x}{3}$$

$$30 = x$$

check: $250 - 3(30) = 160$

$$250 - 90 = 160$$

$$160 = 160 \checkmark$$

It will take 30 days

B. The melting rate must be steady and constant.

#11. A. Let $x =$ the number of days crew A has been digging

$$9x = 12(x - 2)$$

$$9x = 12x - 24$$

$$\frac{24}{3} = \frac{3x}{3}$$

$$8 = x$$

check \rightarrow

$$9(8) = 12(8 - 2)$$

$$72 = 72 \checkmark$$

They will have dug the same number of meters after 8 days.

B. Using the same variable as above,

$$9x + 12(x - 2) = 1992$$

$$9x + 12x - 24 = 1992$$

$$\frac{21x}{21} = \frac{2016}{21}$$

check

$$9(96) + 12(96 - 2) = 1992$$

$$864 + 1128 = 1992$$

$$1992 = 1992 \checkmark$$

$x = 96$ days

The tunnel will be dug in 96 days.

#12. Let $x =$ the 1st integer

$$x + 2 =$$
 the 2nd ~~odd~~ integer
$$x + 4 =$$
 the 3rd ~~odd~~ integer
$$x + (x + 4) = 3(x + 2) - 131$$

$$2x + 4 = 3x + 6 - 131$$

$$2x + 4 = 3x - 125$$

$$129 = x$$

check

$$129 + 133 \stackrel{?}{=} 3(131) - 131$$

$$262 \stackrel{?}{=} 393 - 131$$

$$262 = 262 \checkmark$$

The 3 integers are 129, 131, and 133

#13. Let $x =$ the train's speed in km/hr

$$d = rt$$

$$4 = x \cdot \frac{1}{6}$$

$$24 = x$$

check

$$4 \text{ km} = 24 \frac{\text{km}}{\text{hr}} \cdot \frac{1}{6} \text{ hr}$$

$$4 \text{ km} = 4 \text{ km} \checkmark$$

The train is moving 24 km/hr.

#14. Let $x =$ the number of hours it takes to drain the pool when all 3 drains are open.

In one hour,

$$40 \left(\frac{1}{5} + \frac{1}{8} + \frac{1}{10} \right) = \frac{1}{x} \cdot 40$$

$$8 + 5 + 4 = \frac{40}{x}$$

$$\frac{17}{1} = \frac{40}{x}$$

$$17x = 40$$

$$\frac{17x}{17} = \frac{40}{17}$$

$$x = 2\frac{6}{17} \text{ hours}$$

check

$$\frac{1}{5} + \frac{1}{8} + \frac{1}{10} = \frac{1}{2\frac{6}{17}}$$

$$\frac{8}{40} + \frac{5}{40} + \frac{4}{40} = 1 \div 2\frac{6}{17}$$

$$\frac{17}{40} = 1 \div \frac{40}{17}$$

$$\frac{17}{40} = 1 \cdot \frac{17}{40}$$

$$\frac{17}{40} = \frac{17}{40} \checkmark$$

It will take $2\frac{6}{17}$ hours to drain if all are open.