Math 20 Chapter 1 Review

#1. (I) Addition Property of Zero

$$a+0=0+a=a$$

a, b and c are any three numbers

(II) Commutative Property of Addition

$$a+b=b+a$$

(III) Associative Property of Addition

$$(a+b)+c=a+(b+c)$$

#2. (I) Multiplication Property of Zero

$$a\cdot 0=0\cdot a=0$$

(II) Multiplication Property of One

$$a\cdot 1=1\cdot a=a$$

(III) Commutative Property of Multiplication

$$a\cdot b=b\cdot a$$

(IV) Associative Property of Multiplication

$$(a\cdot b)\cdot c=a\cdot(b\cdot c)$$

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#3. (a) product of a and b = $a \cdot b$

(b) sum of a and b = $a + b$

(c) difference of a and b = $a - b$

(d) quotient of a and b = $\frac{a}{b}$ or $a \div b$

#4. (a) the sum of x and 3 = $x + 3$

(b) the difference of 10 and m = $10 - m$

(c) the product of 4 and y = $4y$

(d) 8 subtracted from p = $p - 8$

(e) the quotient of x and 2 = $\frac{x}{2}$ or $x \div 2$

(f) 10 divided by q = $10 \div q$ or $\frac{10}{q}$

(g) the product of 2 and the sum of x and y = $2 \cdot (x + y)$

(h) the qutient of x and the difference of p and q = $\frac{x}{(p-q)}$

or

$x \div (p-q)$

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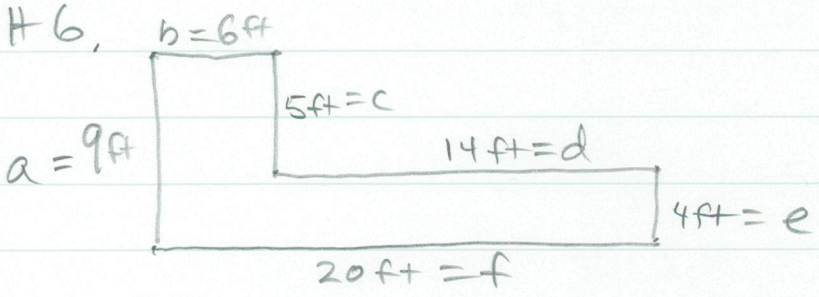
#5. (a) $3(a+5) = 3 \cdot a + 3 \cdot 5$
$= 3a + 15$

(b) $6(3x+2) = 6 \cdot 3x + 6 \cdot 2$
$= 18x + 12$

(c) $5(2x+10) = 5 \cdot 2x + 5 \cdot 10$
$= 10x + 50$

#6.



Perimeter $= a + b + c + d + e + f$
$= (9ft) + (6ft) + (5ft) + (14ft) + (4ft) + (20ft)$
$= 15ft + 19ft + 24ft$
$= 34ft\ 24ft$
$= 58ft$

ANS: The perimeter is 58 ft.

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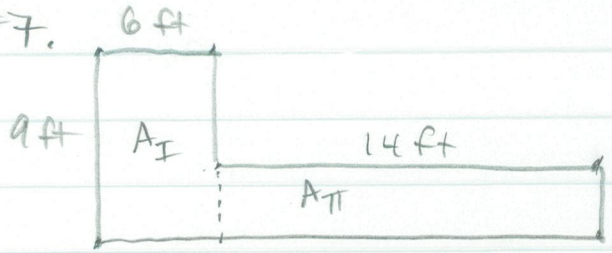
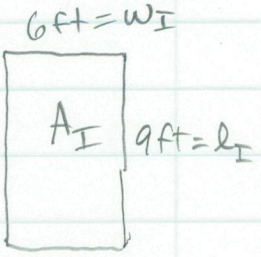
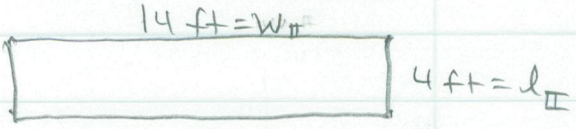
#7.





$A_I = l_I \cdot w_I$
$A_I = (6ft)(9ft)$
$A_I = 54\ ft^2$



$A_{II} = l_{II} \cdot w_{II}$
$A_{II} = (4ft)(14ft)$
$A_{II} = 56\ ft^2$

Total Area $= A_I + A_{II}$
$= l_I \cdot w_{II} + l_{II} \cdot w_{II}$
$= (6ft)(9ft) + (4ft)(14ft)$
$= 54\ ft^2 + 56\ ft^2$
$= 110\ ft^2$

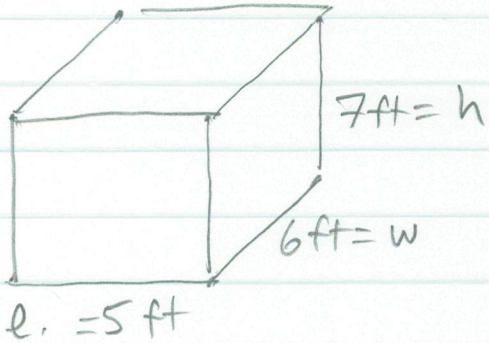
SDWK

$$\begin{array}{r} {}^{1}14 \\ \times\ 4 \\ \hline 56 \end{array}$$

$$\begin{array}{r} {}^{1}54 \\ +56 \\ \hline 110 \end{array}$$

ANS: The total area is $110\ ft^2$.

#8.



$V = l \cdot w \cdot h$
$V = (5ft)(6ft)(7ft)$
$V = 30 \cdot 7\ ft^3$
$V = 210\ ft^3$

SDWK

$$\begin{array}{r} 30 \\ \times\ 7 \\ \hline 210 \end{array}$$

ANS: The volume is $210\ ft^3$.

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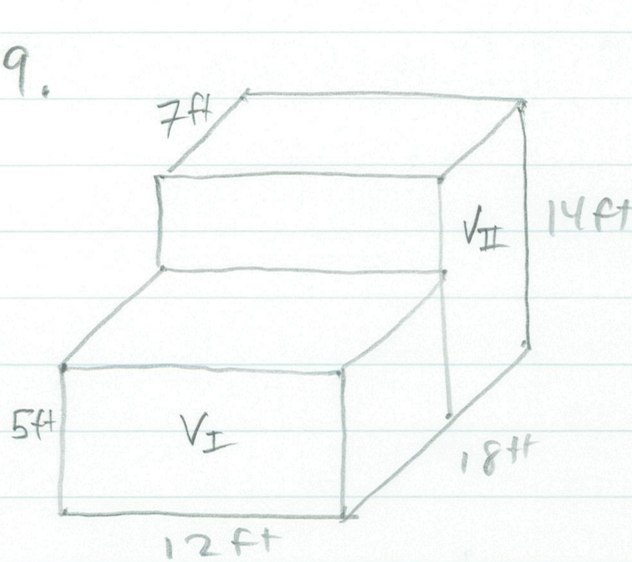
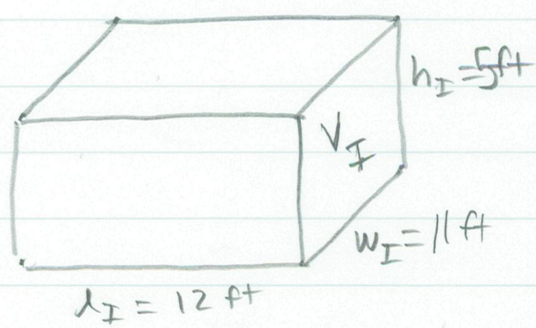
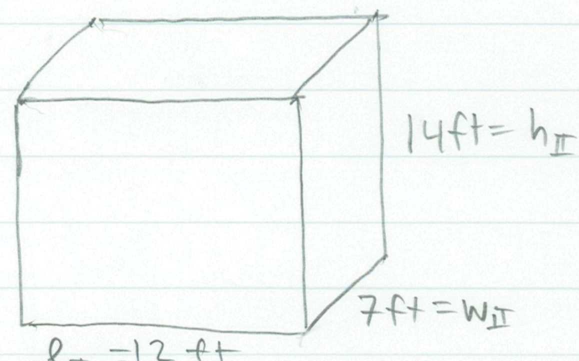
#9.



$$\text{Total Volume} = V_I + V_{II}$$
$$= l_I \cdot w_I \cdot h_I + l_{II} \cdot w_{II} \cdot h_{II}$$
$$= (12ft)(11ft)(5ft) + (12ft)(7ft)(14ft)$$
$$= 132 \cdot 5\ ft^3 + \quad ft^3$$
$$= 660\ ft^3 + \quad ft^3$$
$$= 1{,}836\ ft^3$$



$$V_I = l_I \cdot w_I \cdot h_I$$
$$V_I = (12ft)(11ft)(5ft)$$
$$V_I = 132 \cdot 5\ ft^3$$
$$V_I = 660\ ft^3$$



$$V_{II} = l_{II} \cdot w_{II} \cdot h_{II}$$
$$V_{II} = (12ft)(7ft)(14ft)$$
$$V_{II} = 84 \cdot 14\ ft^3$$
$$V_{II} = 1{,}176\ ft^3$$

spwk

12×11: 12, +120, = 132

$132 \times 5 = 660$

84×14: 336, +840, = 1,176

$1{,}176 + 660 = 1{,}836$

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#10. $(5+6)+3 = 5+(6+3)$, Associative Property of Addition

#11. $7 \cdot 1 = 7$, Multiplication Property of one

#12. $9+0=9$. Addition Property of zero

#13. $5 \cdot 6 = 6 \cdot 5$, Commutative Property of Multiplication

#14. $(5 \cdot 8) \cdot 7 = 5 \cdot (7 \cdot 8)$, Commutative Property of Multiplication AND Associative Property of Multiplication

#15. $3+(9+2) = (9+2)+3$, Commutative Property of Addition

#16. $135 + 741 = 876$

SDWK

$$\begin{array}{r} 135 \\ +741 \\ \hline 876 \end{array}$$

#17. $378 + 794 = 1,172$

SDWK

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 794 \\ +378 \\ \hline 1,172 \end{array}$$

#18. $5,401 + 329 + 10,653 = 16,383$

SDWK

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 10,653 \\ 5,401 \\ +\ 329 \\ \hline 16,383 \end{array}$$

#19. $937 - 413 = 524$

SDWK

$$\begin{array}{r} 937 \\ -413 \\ \hline 524 \end{array}$$

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#20. $853 - 276 = 577$

SDWK

$$\begin{array}{r} {\scriptstyle 7\,14\,13} \\ 853 \\ -276 \\ \hline 577 \end{array}$$

#21. $7,052 - 3,967 = 3,085$

SDWK

$$\begin{array}{r} {\scriptstyle 6\,9\,14\,12} \\ 7,052 \\ -3,967 \\ \hline 3,085 \end{array}$$

#22. $9 \cdot (186) = 1,674$

SDWK

$$\begin{array}{r} {\scriptstyle 7\,5} \\ 186 \\ \times \quad 9 \\ \hline 1,674 \end{array}$$

#23. $62 \cdot (359) = 22,258$

SDWK

$$\begin{array}{r} {\scriptstyle 3\,5\,5} \\ 359 \\ \times 62 \\ \hline 718 \\ +21,540 \\ \hline 22,258 \end{array}$$

#24. $28,782 \div 41 = 702$

SDWK

$$\begin{array}{r|l} & 702 \\ \hline 41 & 28,782 \\ & 287 \\ \hline & 82 \\ & -82 \\ \hline & 0 \end{array}$$

$41 \times 7 = 287$

$41 \times 2 = 82$

#25. $12,243 \div 583 = 21$

SDWK

$$\begin{array}{r|l} & 21 \\ \hline 583 & 12,243 \\ & -1,166 \\ \hline & 583 \\ & -583 \\ \hline & 0 \end{array}$$

$583 \times 2 = 1,166$

#26. $516,249$ rounds to the nearest hundred as $516,200$.

#27. $516,249$ rounds to the nearest ten-thousand as $520,000$.

#28. $6 + 2 \cdot 7^2 = 6 + 2 \cdot 49$
$= 6 + 98$
$= 104$

SDWK

$7^2 = 7 \cdot 7 = 49$

$49 \times 2 = 98$

$98 + 6 = 104$

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#29. $4 \cdot (1 + 6 \cdot 5) = 4 \cdot (1 + 30)$
$= 4 \cdot (31)$
$= 124$

SDWK

$6 \times 5 = 30$ $\quad 31 \times 4 = 124$

#30. $8(5)^2 - 7(3)^3 = 8 \cdot 25 - 7 \cdot (3)^3$
$= 8 \cdot 25 - 7 \cdot 27$
$= 200 - 7 \cdot 27$
$= 200 - 189$
$= 11$

SDWK

$5^2 = 5 \cdot 5 = 25$

$3^3 = 3 \cdot 3 \cdot 3 = 9 \cdot 3 = 27$

1910
200
-189
11

$25 \times 8 = 200$

$27 \times 7 = 189$

#31. $8 - 2(5 - 3) = 8 - 2 \cdot (2)$
$= 8 - 4$
$= 4$

#32. $8 \div 4 \cdot 2 = 2 \cdot 2$
$= 4$

#33. Average Score (Mean) $= \frac{143 + 187 + 150 + 176}{4}$
$= \frac{656}{4}$
$= 164$

SDWK

$143 + 187 + 150 + 176 = 656$

$4 \overline{)656}$ $\quad -4$ $\quad 25$ $\quad -24$ $\quad 16$ $\quad -16$ $\quad 0$ $\quad \Rightarrow 164$

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#34. Find the mode: 14, 18, 27, 73, 36, 18

ANS: The mode is 18.

#35. Find the median: 42, 48, 64, 73, 15, 62

Re-order: 15 < 42 < 48 < 62 < 64 < 73

1 2 3 4 5 6

$$\text{median} = \frac{48+62}{2}$$

$$\text{median} = \frac{110}{2}$$

$$\text{median} = 55$$

SCRATCH

48
+62
110

$$2\overline{)110} \quad 55$$

-10
10
-10
0

#36. Five more than the difference of 17 and 4

$= 5 + (17-4)$ ✓

$= 5 + 13$

$= 18$ ✓

#37. Twice the sum of 11 and 7

$= 2 \cdot [11+7]$

$= 2 \cdot (18)$

$= 36$

SCRATCH

18
×2
36

#38. The quotient of 20 and 5 increased by 9

$= (20 \div 5) + 9$

$= 4 + 9$

$= 13$

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#39. A hardward stove bought 35 cases of motor oil and each case contained 24 quarts of motor oil. How many quarts of motor oil did the hardware store purchase?

quarts of motor oil purchased = $35 \cdot 24$

or

$= (35 \text{ cases}) \cdot \left(24 \frac{\text{quarts of oil}}{1 \text{ case}}\right)$

$= 840$ quarts of oil

scrap work:

```
  2
  35
 x24
 140
 700
 840
```

ANS: The hardware store purchased 840 quarts of motor oil.

#40. A person has a yearly income of $18,324. What is the person's monthly income?

12 months = 1 year

Monthly income = $18,324 ÷ 12

= $1,527

=

scrap work:

```
      1,527
  12 | 18,324
     -12
      63
     -60
      32
     -24
      84
     -84
       0
```

```
12
x5
60

12
x7
84
```

ANS: This person has a monthly income of $1,527.

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#41. Karen earns $7 an hour for the first 40 hours she works in a week and $10 an hour for every hour after that. Each week she has $85 deducted from her check for income taxes and retirement. If she works 47 hours in one week, how much is her take-home pay?

hours worked after 40 hours = 47 − 40
= 7 hours

take-home pay = $7 · 40 + $10 · 7 − $85
= $280 + $70 − $85
= $350 − $85
= $265

3 Dwk

40	10
r7	x7
280	70

280	3 14 10
+70	380
350	−85
	265

ANS: Karen's take-home pay for the 47 hours she worked that week was $265.