

Grade 7 Mathematics
RELEASED Form
2018–2019
Answer Key

Item Number	Type	Key	Domain
S1	MC	C	
S2	GR	-7	
S3	GR	3/4	

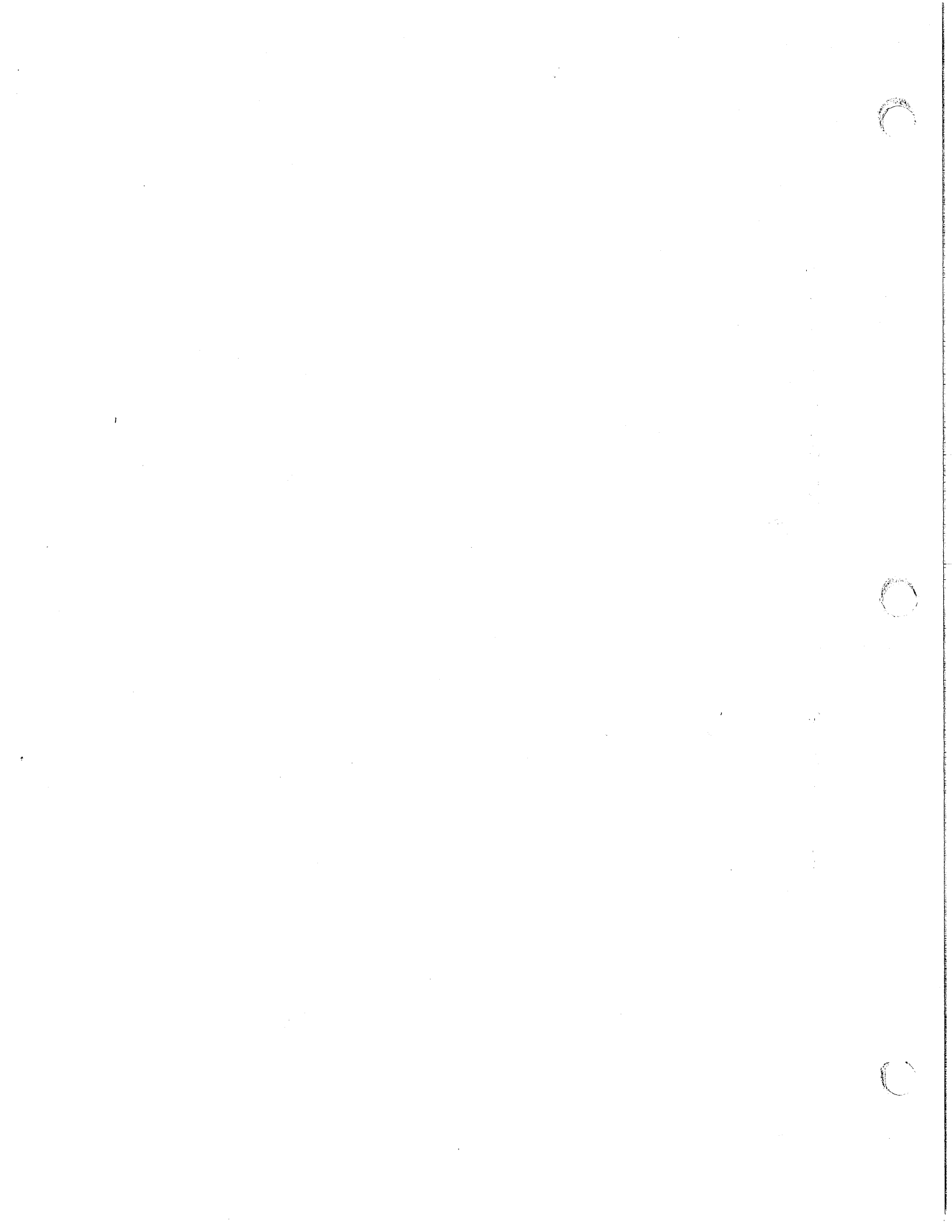
Calculator Inactive

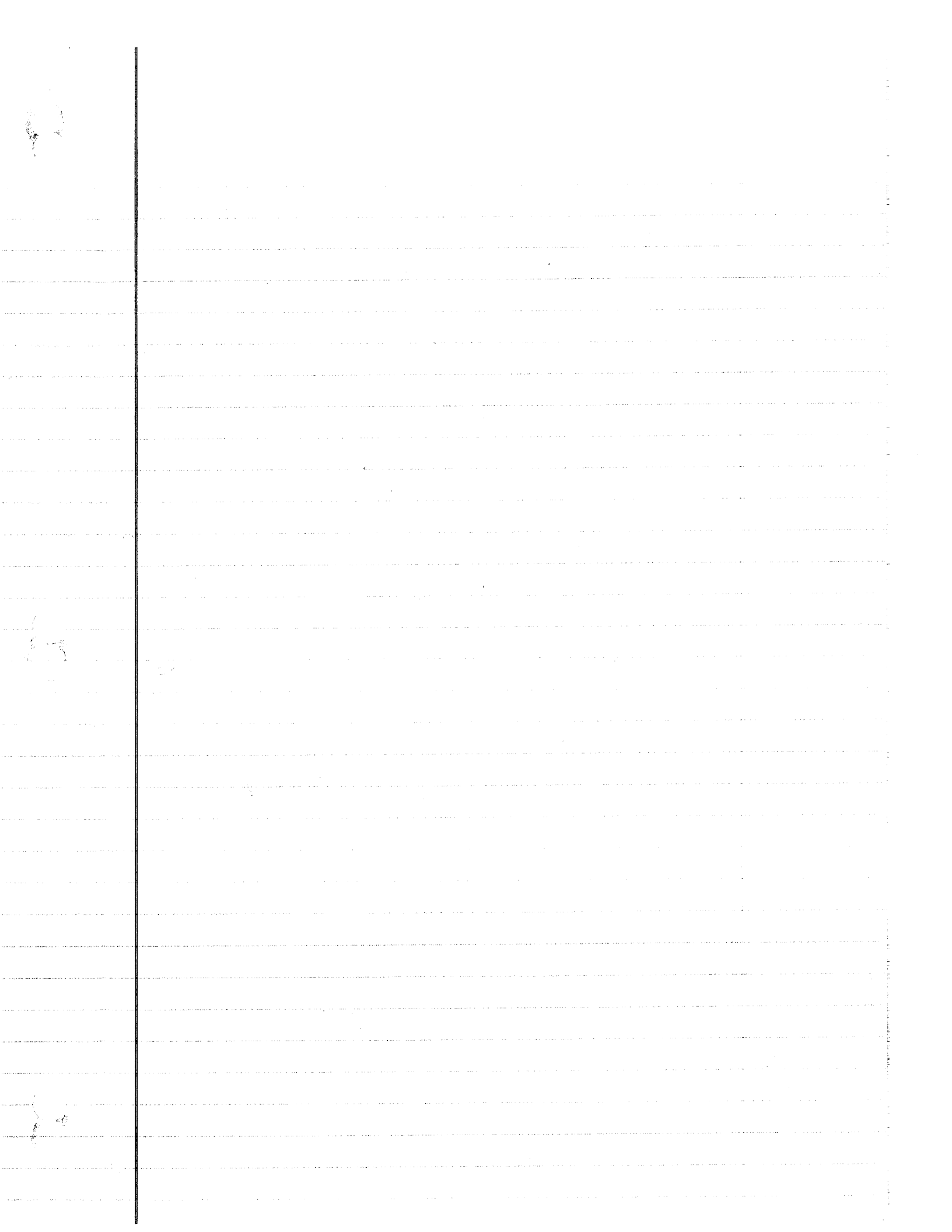
Item Number	Type	Key	Domain
1	MC	C	NC.7.NS.3
2	MC	D	NC.7.SP.7.a
3	MC	A	NC.7.RP.2.b
4	MC	B	NC.7.SP.4
5	MC	D	NC.7.EE.1
6	MC	C	NC.7.RP.2.b
7	MC	B	NC.7.EE.1
8	MC	D	NC.7.RP.2.c
9	MC	C	NC.7.EE.1
10	MC	A	NC.7.RP.2.c
11	GR	1260	NC.7.NS.3
12	GR	46.20	NC.7.NS.3
13	GR	135	NC.7.G.5
14	GR	2.4	NC.7.RP.1
15	GR	12	NC.7.EE.4.a

Calculator Active

Item Number	Type	Key	Domain
16	GR	14	NC.7.G.5
17	GR	16	NC.7.RP.1
18	GR	1200	NC.7.NS.3
19	GR	3/8	NC.7.RP.1
20	GR	108	NC.7.G.5
21	MC	B	NC.7.RP.3
22	MC	C	NC.7.EE.3
23	MC	B	NC.7.G.4
24	MC	D	NC.7.SP.2
25	MC	C	NC.7.RP.3
26	MC	A	NC.7.EE.1
27	MC	B	NC.7.RP.3
28	MC	C	NC.7.SP.8.b
29	MC	D	NC.7.G.1
30	MC	B	NC.7.SP.8.a
31	MC	A	NC.7.EE.4.b
32	MC	D	NC.7.SP.6
33	MC	C	NC.7.G.4
34	MC	A	NC.7.SP.1
35	MC	C	NC.7.EE.3
36	MC	D	NC.7.RP.2.a
37	MC	A	NC.7.SP.8.b
38	MC	C	NC.7.EE.4.a
39	MC	B	NC.7.NS.3
40	MC	A	NC.7.RP.2.a

Item Number	Type	Key	Domain
41	MC	A	NC.7.SP.4
42	MC	B	NC.7.EE.3
43	MC	C	NC.7.SP.3.a
44	MC	B	NC.7.G.6
45	MC	C	NC.7.SP.7.a





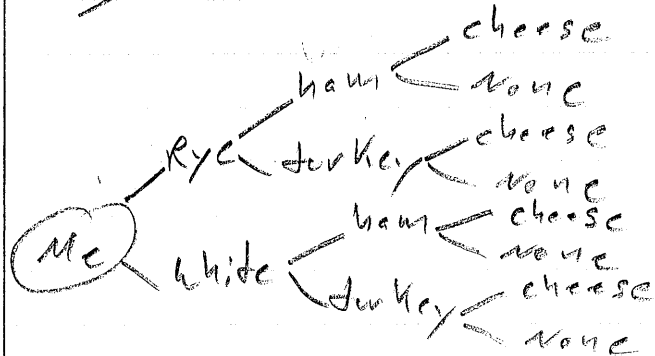
$$\begin{aligned} S1) \quad & y = 3x \\ & y = 3(7) \\ & y = 21 \end{aligned}$$

$$S2) \quad -7$$

S 3) 3 out of the four areas are shaded. $\frac{\text{part}}{\text{whole}} = \frac{3}{4}$

- 1)
- A $\frac{1}{x} = \frac{1}{100}$
 - B $\frac{10}{x} = \frac{10}{100} = \frac{1}{10}$
 - C $1-x = 1-100 = -99 = C$
 - D $10-x = 10-100 = -90$

2)



$$\frac{\text{Desired outcome}}{\text{Possible outcome}} = \frac{4 \text{ w/ cheese}}{8 \text{ total}} = \frac{1}{2} = D$$

3)

$$\frac{\$}{\text{pound}} = \frac{41.50}{5} = 8.3 = .9$$

$$.94 - .9 = .04 = A$$

4) Tom: 100, 90, 90, 80, 80, 70, 60

Sally: 100, 90, 90, 70, 70, 70, 50

Median means Middle (while in order from greatest to least)

(B)

5) $\frac{1}{2}(2n+6)$
 $n+3 = (D)$

$$6) \frac{\$}{n} = \frac{47.50}{5} = 5 \overline{) 47.50}$$

$$\begin{array}{r} 9.5 \\ 5 \overline{) 47.50} \\ \underline{45} \\ 25 \\ \underline{25} \\ 0 \end{array}$$

7) $\$9.50$ ← (dollars is always to the one hundredth place

$$7) 3x - (2x + 4) + 5 \text{ OR } 3x - (2x + 4) + 5$$

means opposite Distribute the negative

$$3x - 2x - 4 + 5$$

$$x + 1 = \textcircled{B}$$

$$8) \frac{y}{x} = \frac{163.5}{3} = 54.5$$

54.5 times X equals y

$$54.5x = y$$

(D)

$$9) \begin{array}{c} 2(3-x) - 12 + 4x \\ \textcircled{6} \textcircled{-2x} \textcircled{-12} \textcircled{+4x} \\ \textcircled{-6} \textcircled{+4x} \end{array}$$

$4x - 6$ → I switched the terms to put the X first. Be sure your sign follows the term.

10) $C = \text{total}$ and $m = \text{months}$

$$\frac{\$}{\text{months}} = \frac{12,564}{12} = 1,047$$

monthly payment times the months equals the total
 $1,047 \cdot m = C$

(A)

$$\begin{array}{r} 1,047 \\ 12 \overline{) 12,564} \\ \underline{12} \\ 05 \\ \underline{00} \\ 56 \\ \underline{48} \\ 84 \\ \underline{84} \\ 0 \end{array}$$

$$11) 12,500 \times \frac{2}{5} = \frac{25,000}{5} = 5,000 \text{ Fiction}$$

$$\frac{19,000}{1} \times \frac{2}{5} = \frac{38,000}{5} = 7,600 \text{ Non Fiction}$$

12,600 Total

$$\frac{12,600}{1} \times \frac{1}{10} = \frac{12,600}{10}$$

1,260 Books due in

12)

$7 \times 8.8 = 61.6$ total made

$\frac{61.6}{1} \times \frac{1}{4} = \frac{61.6}{4} = 15.40$ Given to man

61.60	total
- 15.40	Given away
<hr/>	
46.20	Kevin had left

8.87
<hr/>
61.6
<hr/>
15.4
4 61.6
4
<hr/>
21
<hr/>
206
<hr/>
16
<hr/>
16
<hr/>
0

13)

- 1) A square has 4 square sides
- 2) Line ST must form 2 90° angles in order for RSTU to be a square.
- 3) Angle VSR is made up of $\angle VST$ and $\angle TSR$
 $\angle VST$ must be 45 because it's complementary to the 45° given
 $\angle RST$ must be 90° for it to make a square.
 $\angle RST = 90 + \angle VST 45$
 $90 + 45 = 135$

$$14) \frac{\text{minutes}}{\text{necklace}} = \frac{20}{4/5} \times \frac{60}{5} \times$$

$$\frac{4}{5} \cdot \frac{60}{1} = \frac{240}{5} = \frac{48}{1} = \frac{20x}{20}$$

$$2.4 = x$$

$$15) \begin{array}{r} 20.90 \\ - 5.12 \text{ change} \\ \hline 14.88 \leftarrow \text{Total cost} \end{array}$$

$$\frac{\$}{\text{pencil}} = \frac{1.24}{1} \times \frac{14.88}{x}$$

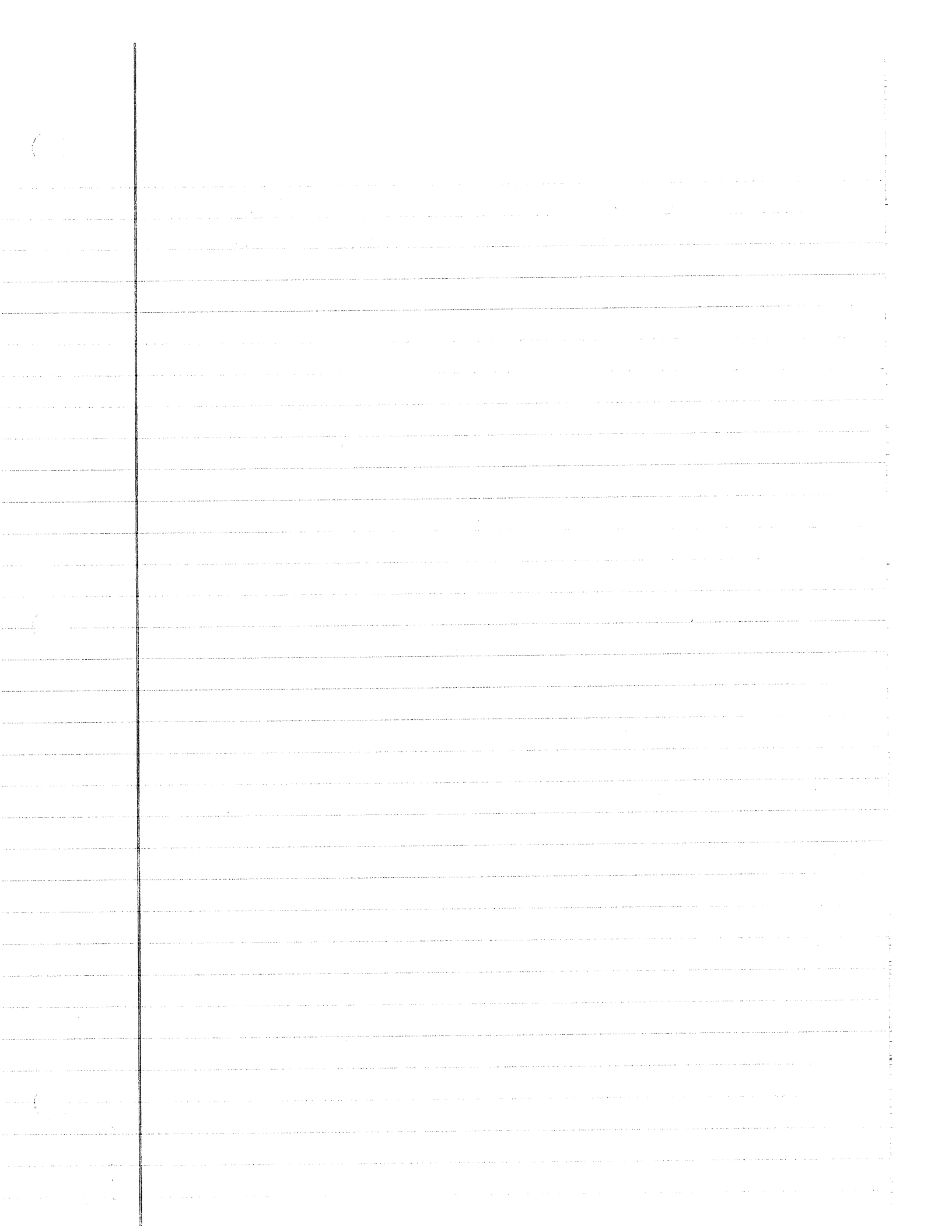
$$1.24 \sqrt{14.88} = 1.24x$$

$$\boxed{12 = x}$$

12 pencils

$$1.24 \overline{) 14.88}$$

$$\begin{array}{r} 12 \\ \underline{124} \\ 88 \\ \underline{852} \\ 36 \\ \underline{368} \\ 0 \end{array}$$



16) Couple meaning someone is the RIGHT
thing to do and right angles = 90°
Both angles add up to 90°

$$(4x) + (2x + 6) = 90$$

$$4x + 2x + 6 = 90$$

$$6x + 6 = 90$$

$$\begin{array}{r} -6 \\ -6 \end{array}$$

$$6x = 84$$

$$x = 14$$

$$12) \frac{\text{miles}}{\text{gallons}} = \frac{1/4}{1/64} \times \frac{x}{1}$$

$$\frac{1}{64} x = \frac{1}{4} \cdot \frac{1}{64}$$

$$x = 16$$

$$1/4 \div 1/64 = 1/4 \times \frac{64}{1}$$

$$16 = \frac{64}{4}$$

18) 1) What is Craig's monthly bill?
 $720/12 = 60$ per month

2) What is his total monthly earnings?

His total monthly earnings times $1/20 = 60$

$$x \cdot 1/20 = 60$$

$$\frac{60}{1} \div \frac{1}{20} = \frac{60}{1} \times \frac{20}{1} = \frac{1200}{1}$$

$$x = 1200$$

$$19) \frac{oi}{water} = \frac{1/4}{2/3} = \frac{x}{1}$$

$$\frac{2/3}{1} x = \frac{1/4}{1}$$

$$x = \frac{3/8}$$

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

$$\frac{3/8}{1}$$

20) A line equals 180° and both angles add up to 180°

$$x + \frac{2}{3}x = 180$$

$$\frac{5}{3}x = 180$$

$$\frac{5}{3}x = 180$$

$$\frac{180}{1} \div \frac{5}{3} = \frac{180}{1} \times \frac{3}{5} = \frac{540}{5} = 108$$

$$x = 108$$

21)

Ham	$\frac{1}{4} \cdot 5.99 \approx 1.5$
Turkey	$1\frac{1}{2} \cdot 4.99 \approx 7.5$
RB	$1 \cdot 6.99 \approx 7$
Bologna	$\frac{3}{4} \cdot 3.99 \approx 3$
	<hr/>
	19

(B)

22)

Alice 75%
Mary $\frac{8}{10} = 80\%$
Sara $\frac{17}{20} = 85\%$
Ellen $\frac{3}{5} = 60\%$

(C)

23)

$$D = \pi r^2$$

$$\text{Martin} = \pi (8)^2 \approx 200$$

$$\text{Ricky} = \pi (10)^2 \approx 314$$

114 d. Difference

24) This table measures number of visits NOT the percent. D is the only correct answer

25) $48 \times .1 = 4.8$ discount

$$\begin{array}{r} 48.10 \\ - 4.8 \\ \hline 43.30 \text{ Tony} \\ 42.95 \text{ Keith} \\ \hline .25 \text{ difference} \end{array}$$

(C) Keith paid .25 less than Tony

26) $-\frac{1}{2}(\frac{1}{4}x - \frac{3}{8})$
 $-\frac{1}{8}x + \frac{3}{16} = \textcircled{A}$

27) $\frac{\text{change in price}}{\text{original}} = \frac{\%}{100}$

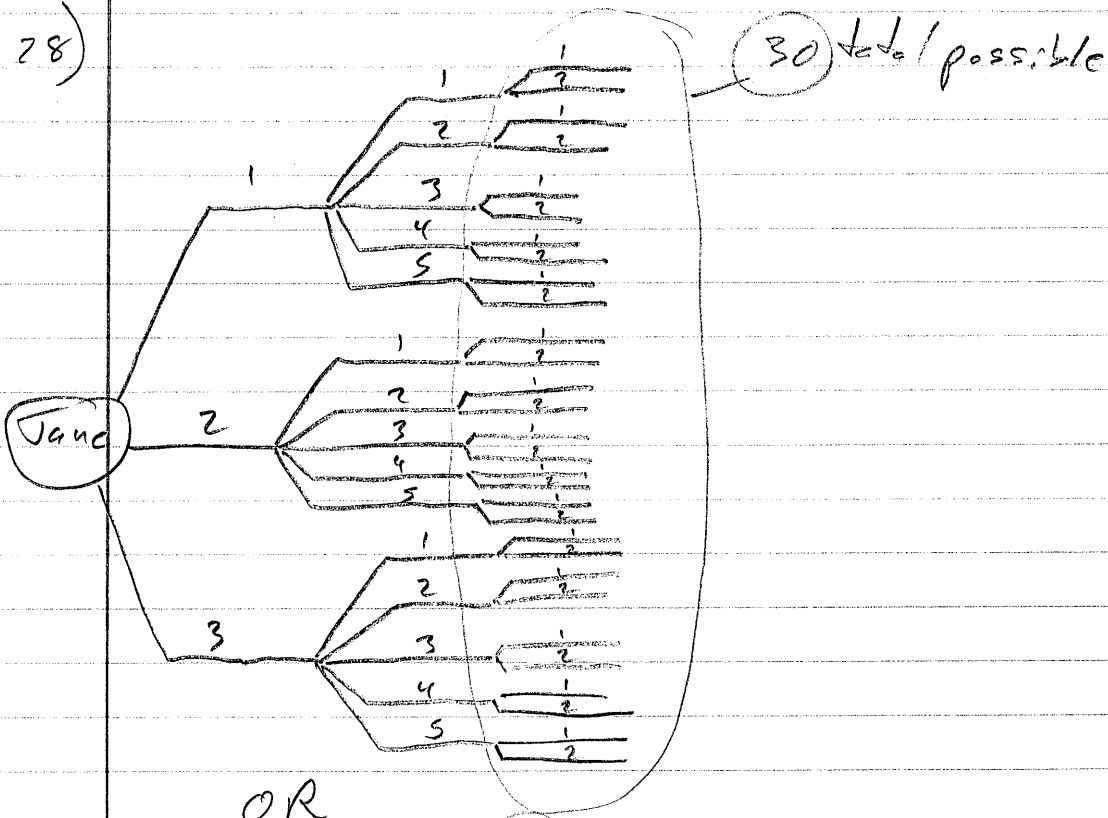
$\frac{20}{79.95} = \frac{x}{100}$

$\frac{179.95}{59.95} = \frac{20.00}{x}$

$79.95x = 2000$

$x = 25$

28)



OR
 $3 \times 5 \times 2 = \textcircled{30}$

$$29) \frac{\text{inch}}{\text{feet}} = \frac{1}{16} \times 1\frac{3}{4}$$
$$\frac{16}{1} \times \frac{7}{4} = \frac{112}{4} = 28 = X$$

$$1\frac{3}{4} \times 1\frac{3}{4}$$

$$28 \times 28 = 784 \text{ feet}^2$$

on right square

$$2\frac{1}{4} \times 16 = 36$$

$$3 \times 16 = 48$$

$$36 \times 48 = 1,728 \text{ on left}$$

rectangle

$$1,728 + 784 = 2,512$$

D is closest

$$30) \frac{\# \text{ of desired outcomes}}{\# \text{ of possible outcomes}} = \frac{2}{4} = \frac{1}{2}$$

"Both" means it is a dependant event
so we multiply each spin

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \text{ (B)}$$

$$31) -5(m+1) \leq 23$$

$$-5m - 5 \leq 23$$

$$\begin{array}{r} +5 \\ -5m - 5 \end{array} \leq \begin{array}{r} +5 \\ 23 \end{array} \leftarrow +5 \text{ to both sides to cancel the } -5$$

$$\frac{-5m}{-5} \leq \frac{28}{-5} \leftarrow \text{divide by } -5 \text{ to cancel the } -5$$

$$m \geq \frac{-28}{5}$$

(A)

→ AND when you multiply OR divide by a negative, you flip the sign.

32) Experimental Probability = $\frac{\text{number of occurrences}}{\text{number of attempts}}$

$$\text{Exp. Prob for blue is } \frac{14}{60} = \frac{7}{30}$$

$$\frac{7}{30} \times \frac{450}{1} = \frac{3,150}{30} = 105 \quad \text{D}$$

33) What part of the circle is shaded?

7.3 cm of the circumference

$$2\pi r = C$$

$$2\pi(7) = 43.96$$

$$\frac{\text{part}}{\text{whole}} = \frac{7.3}{43.96} \approx .16606 \text{ or about } 16.6\%$$

$$\text{Area of the circle is } \pi r^2 = \pi(7)^2 = 153.86$$

$$153.86 \times 16.6\% = 25.54$$

$$\text{Approximately } 25.6 = \text{C}$$

34) A is a better choice because all students enter school. All of the other options limit some people from being included.

35) I need to add up the two groups. Fractions are more accurate so I'll convert to fractions

$$1^{\text{st}} \text{ group} = \frac{3}{5}$$

$$2^{\text{nd}} \rightarrow 80\% = .8 = \frac{8}{10} = \frac{4}{5}$$

$$\frac{\text{part}}{\text{whole}} = \frac{3+4}{5+5} = \frac{7}{10} = \textcircled{C}$$

36) object 1 traveled 15 feet in 10 minutes

$$\frac{\text{feet}}{\text{minutes}} = \frac{15}{10} = \frac{3}{2} = \frac{x}{1}$$
$$2x = 3$$
$$x = \frac{3}{2} \text{ unit rate}$$

Object 2 traveled 10 feet in 15 minutes

$$\frac{10}{15} = \frac{2}{3} \text{ unit rate}$$
$$\frac{3}{2} = \frac{9}{6}$$
$$- \frac{2}{3} = \frac{4}{6}$$

$$\frac{5}{6} \text{ faster}$$

$$38) \quad -5 = \frac{y-7}{9}$$

(9) (9) ← multiply by 9 to
cancel the 9

$$-45 = y - 7$$

+7 +7 ← Add 7 to cancel

$$-38 = y$$

$$39) \quad \frac{17}{12} - \frac{49}{40}$$

$$1,42 - 1,225 = .195$$

.20

- A = .25
- B = .20**
- C = .16
- D = .14

40) 6.75 times the weight equals the price
6.75 is the unit rate for store 1

$$\text{Store 2} \quad \frac{15.00}{2} = \frac{x}{1}$$

$$2x = \frac{15}{2}$$

$$x = 7.50$$

$$\begin{array}{r} 7.50 \text{ store 2} \\ - 6.75 \text{ store 1} \\ \hline .75 \text{ difference} \end{array}$$

41) Team 1

$$51 - 49 = 2$$

$$47 - 49 = 2$$

$$35 - 49 = 14$$

$$48 - 49 = 1$$

$$64 - 49 = 15$$

245

$$34 \div 5 = \boxed{6.8} \text{ team 1}$$

↑ $\div 5$ avg of 49

Team 2

$$27 - 42.8 = 15.8$$

$$55 - 42.8 = 12.2$$

$$53 - 42.8 = 10.2$$

$$38 - 42.8 = 4.8$$

$$41 - 42.8 = 1.8$$

214

$$44.8 \div 5 = \boxed{8.96} \text{ team 2}$$

↑ $\div 5$ avg = 42.8

8.96

- 6.8

2.16 difference

42) Before the pay raise is $8 \times 35 = 280$

A 5% pay raise $280 \times .05 = \boxed{14}$

43) Range is largest minus the smallest
 $94 - 52 = 42$

44) Equilateral triangles have three sides of equal length.

I can break the surface into three rectangular sides each 4×5 and two triangles, each with a base of 4 and a height of 3.5

$$\text{triangle } A = \frac{1}{2} b h$$
$$\frac{1}{2} \cdot 4 \cdot 3.5 = 7$$

$$\text{rectangle area} = h \cdot w$$

$$4 \cdot 5 = 20$$

$$2 \text{ triangles} = 7 \cdot 2 = 14$$

$$3 \text{ rectangles} = 20 \cdot 3 = 60$$

$$\underline{81}$$

$$45) \frac{\text{desired}}{\text{possible}} = \frac{2}{5} = \frac{x}{450}$$

$$\frac{5x}{5} = \frac{900}{5}$$

$$x = 180$$