

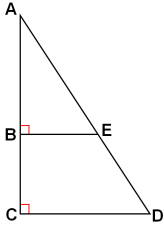
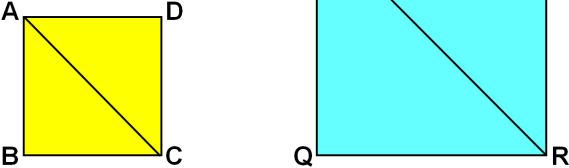
ANSWER KEY

QUESTION	CORRECT ANSWER
1	<p>D</p> <p>Given: cow:sheep = 2:7 8 cows</p> <p>Solution: $2/7 = 8/S$ $2S = 56$ $S = 28$</p> <p>Total = 28 sheeps + 8 cows = 36</p>
2	<p>E</p> <p>Given: 24 cm x 40 cm 2 cm margin</p> <p>Solution: $24 \times 40 = 960 \text{ cm}^2$ ← original $20 \times 36 = 720 \text{ cm}^2$ ← with margin</p> <p>$720/960 = 0.75$ or 75%</p>
3	<p>B</p> <p>Given: Bernard = 3 David David = 2 Gerald Bernard = S</p> <p>Solution: David = Bernard / 3 = $S / 3$ Gerald = David/2 = $(S/3) / 2 = S/6$ $S + S/3 + S/6 = (6S + 2S + S)/6 = 9S / 6 = 3S/2$ ← total $3S/2 / 3 = \text{Average}$ $= 3S / 6 = S/2$</p>
4	<p>A</p> <p>Given: 54, 35, 89, 76, 48, P, and Q Mode = 76 Median = 54</p>

	<p>Solution: 35, 48, 54,76,89 If mode = 76 P or Q = 76 but P<Q Therefore assume Q = 76 35, 48, 54,76,76, 89 If Median is 54 P should be less than 54 35, 48,P, 54,76,76,89 Therefore P = 50</p>
5	<p>C Given: Pumpkin:Squash = 3:5 45 pumpkins</p> <p>Solution: $\% = 45/S$ $3S = 225$ $S = 75$ Squash</p>
6	<p>A Given: 20% salt by volume 200% larger 16 L = Remaining</p> <p>Solution: transferred to 200% Larger therefore 3 times the container $20/300 = 0.0666667$ or 6.666667% ← salt percentage $6.67/100 = (X - 16) / X$ $X = 17.1428$ L ← Total $17.1428 - 16 = 1.1428$ L</p>
7	<p>C Given: 200 claypots in 3 hours 50 were painted</p> <p>Solution: $3 \times 60 = 180$ mins Let X = time to make not painted pot</p>

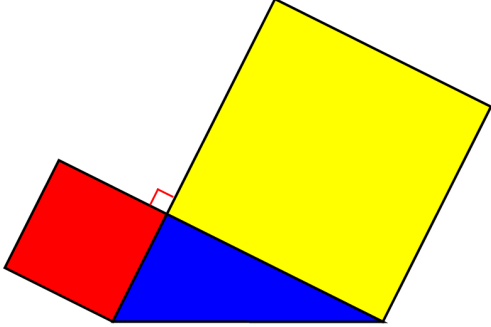
	$50(2X) + 150(X) = 180$ $100X + 150X = 180$ $X = 0.72 \text{ mins each pot}$ $50(2)(0.72) = 72 \text{ mins} \leftarrow \text{all painted pots}$
8	<p>D</p> <p>Given: 25% off for \$180</p> <p>Solution: Let X = original price $X - X(0.25) = 180$ $X = \\$240$</p>
9	<p>E</p> <p>Given:</p> <div> </div> <p>Solution: A of BCE = 6 cm^2 $6 = \frac{1}{2} BH$ $6 = \frac{1}{2} B(3)$ $B = 4 \text{ cm}$</p> <p>A of quadrilateral = $L \times W = 4 \times 3 = 12 \text{ cm}^2$</p>
10	<p>D</p> <p>Given: 15 widgets per min 2 ½ hours</p> <p>Solution: $2.5 \times 60 = 150 \text{ mins}$ $150 \times 15 = 2250 \text{ widgets}$</p>

11	<p>C</p> <p>Given: Culture A = Culture B + 500 8 mins ago → Culture A = 2 Culture B Culture A and B = 100 per min</p> <p>Solution: Let Culture A = A ; Culture B = B $8(100) + A = (A/2) + 500 + 8(100)$ $800 + A = 1300 + A/2$ $A - 500 = A/2$ $2A - 1000 = A$ $A = 1000$</p> <p>$B = A/2 = 1000/2 = 500$ bacteria ← Start $B + 8(100) = 500 + 8(100) = 1300$ bacteria ← Current</p>
12	<p>C</p> <p>Given: 5% increase = \$40 530</p> <p>Solution: Let P = Original price of the car $P + P(0.05) = 40\ 530$ $P = \\$38\ 600$</p>
13	<p>A</p> <p>Given: 8 packs of meat = average weight = $12\frac{3}{8}$ kg 4 packs of meat = $15\frac{1}{4}$ kg</p> <p>Solution: $[12\frac{3}{8}(8) + 15\frac{1}{4}(4)] / (8 + 4) = 40/3$ = $13\frac{1}{3}$ kg</p> <p>other solution: 12.375 kg = 8 packs 15.25 kg = 4 packs</p> <p>$[12.375(8) + 15.25(4)] / (8+4) =$ $160/12 = 40/3 = 13\frac{1}{3}$ kg</p>
14	D

	<p>Given:</p>  <p>Solution: $AB = 12 \text{ cm}$ $BC = 8 \text{ cm}$ $AE = 15 \text{ cm}$ $12/8 = 15/ED$ $ED = 10 \text{ cm}$</p>
15	<p>A Given:</p>  <p>Solution: $AC = 6 \text{ cm}$ $PR = 8 \text{ cm}$</p> $6^2 = s^2 + s^2$ $s = 3\sqrt{2}$ $A = s \times s = \approx 3\sqrt{2} \times 3\sqrt{2} = 18 \text{ cm}^2$ $8^2 = S^2 + S^2$ $S = 4\sqrt{2}$ $A = 4\sqrt{2} \times 4\sqrt{2} = 32$ $32 - 18 = 14 \text{ cm}^2$
16	<p>E Given: Average of 4 iron ball = 78 kg Average of five iron ball = 80 kg</p> <p>Solution:</p>

	<p>Let X = Fifth iron ball</p> $78(4) + X / 5 = 80$ $X = 88 \text{ kg}$
17	<p>B</p> <p>Given:</p> <p>3 m³ per min</p> <p>3 m tall</p> <p>Base area = 13 m²</p> <p>Solution:</p> $V = 13 \times 3 = 39\text{m}^3$ $39/3 = 13 \text{ mins}$
18	<p>C</p> <p>Given:</p> <p>Increase by \$1</p> <p>10 fewer = \$120</p> <p>Solution:</p> <p>Let X = price</p> <p>therefore \$120 can buy more than 10 lamps</p> <p>Choice A</p> <p>regular price = $120/1 = 120 \text{ pcs}$</p> <p>increased price = $120/2 = 60 \text{ pcs}$</p> <p>$120 - 60 = 60 \text{ pcs fewer} \leftarrow \text{wrong}$</p> <p>Choice B</p> <p>regular price = $120/2 = 60 \text{ pcs}$</p> <p>increased price = $120/3 = 40 \text{ pcs}$</p> <p>$60 - 40 = 20 \text{ pcs fewer} \leftarrow \text{wrong}$</p> <p>Choice C</p> <p>regular price = $120/3 = 40 \text{ pcs}$</p> <p>increased price = $120/4 = 30 \text{ pcs}$</p> <p>$40 - 30 = 10 \text{ pcs fewer} \leftarrow \text{Correct}$</p> <p>Choice D</p> <p>regular price = $120/4 = 30 \text{ pcs}$</p> <p>increased price = $120/5 = 24 \text{ pcs}$</p> <p>$30 - 24 = 6 \text{ pcs fewer} \leftarrow \text{wrong}$</p> <p>Choice E</p>

	<p>regular price = $120/6 = 20$ pcs increased price = $120/7 = 17.14$ pcs $20 - 17.14 = 2.857$ pcs fewer ← wrong</p>
19	<p>D Given: doubles every 3 days 30 days</p> <p>Solution: Let population = 1 $1 \times 2 = 2$ ← day 3 $2 \times 2 = 4$ ← day 6 $4 \times 2 = 8$ ← day 9 $8 \times 2 = 16$ ← day 12 $16 \times 2 = 32$ ← day 15 $32 \times 2 = 64$ ← day 18 $64 \times 2 = 128$ ← day 21 $128 \times 2 = 256$ ← day 24 $256 \times 2 = 512$ ← day 27 $512 \times 2 = 1024$ ← day 30 $1024 - 1 = 1023$ ← increase $1023/1 \times 100 = 102\ 300\ \%$</p>
20	<p>D Given: 30 birdhouse per hour ← last week 42 birdhouse per hour ← this week</p> <p>Solution: $42 - 30 = 12$ birdhouse increase $12 / 30 = 0.4$ or 40%</p>
21	<p>C Given: 5:8:12 200 candies</p> <p>Solution: total age = $5 + 8 + 12 = 25$ Let X = number of candies for the eldest $12/25 = X/200$ X = 96 candies</p>

22	<p>B</p> <p>Given: c cars = d dollars each sold = r dollars each</p> <p>Solution: $r(c) - d(c) = \text{profit}$ $\text{profit} = c(r-d)$</p>
23	<p>D</p> <p>Given:</p>  <p>Solution: A red = 1 m^2 A yellow = 4 m^2</p> <p>S of red = $\sqrt{1} = 1 \text{ m}$ S of yellow = $\sqrt{4} = 2 \text{ m}$</p> <p>A of blue = $\frac{1}{2} (1)(2) = 1 \text{ m}^2$</p>
24	<p>C</p> <p>Given: $\frac{1}{3} = \text{Red}$ $\frac{1}{3} \text{ remaining} = \text{yellow} = \text{blue} = \text{green}$</p> <p>Red + Yellow = 60</p> <p>Solution: Let X = total number of tokens $X - \frac{1}{3} X = \frac{1}{3} X \leftarrow \text{Red}$ $\frac{2}{3} X (\frac{1}{3}) = (\frac{2}{9}) X \leftarrow \text{Yellow}$</p> <p>$\frac{1}{3} X + (\frac{2}{9}) X = 60$ $5X = 60(9)$ $X = 108 \text{ tokens}$</p>

25	<p>A Given: 4 pcs = 2 m 75 cm each</p> <p>Solution: $2\text{m } 75\text{cm} \times 4 = 11\text{ m}$</p>
26	<p>B Given: four package = 25,31,35,41 Average of five = average of 4</p> <p>Solution: $(25 + 31 + 35 + 41) / 4 = 33$ Let X = fifth number $(25 + 31 + 35 + 41 + X) / 5 = 33$ X = 33 kg</p>
27	<p>D Given: 10 mins and 40 secs = Homer 9 mins and 36 seconds = Rob</p> <p>Solution: $32/3$ hours = Homer ← convert to hours 9.6 hours = Rob ← Convert to hours</p> <p>$9.6 / (32/3) = 0.9$ or 90% Therefore Homer needs to be 10% faster</p> <p>Other Solution: Homer = 640 secs Rob = 576 secs $640 - 576 = 64$ secs ← needs to be faster</p> <p>$64 / 640 = 0.1$ or 10%</p>
28	<p>C Given: Profit = 10% of revenue Revenue 20% decrease Profit 15% of revenue</p>

	<p>Solution: Let Revenue = R</p> <p>Profit = 0.1(R)</p> <p>this year: R - R(0.2) = 0.8R Profit = 0.8R (0.15) = 0.12R</p> <p>This year's profit / Last year's profit = 0.12R / 0.1 R = 1.2 or 120%</p>
<p>29</p>	<p>E Given: Two legs = 20 cm</p> <p>Solution: Largest will be 10 cm for 2 legs therefore we get A = $\frac{1}{2} (10)(10) = 50 \text{ cm}^2$ ← Largest area possible</p>
<p>30</p>	<p>A Given: PQRS = 385 P = 1 S < 15</p> <p>Solution: S < 15 ← Highest number possible is 14 P = 1 Therefore Q and R can be 2 - 14</p> <p>QRS = 385 ← We can remove P since the value is 1 3 numbers from 2 - 14 when multiplied is equal to 385 (5)(7)(11) = 385 since P < Q < R < S R = 7 Q = 5</p> <p>7 - 5 = 2</p>
<p>31</p>	<p>D Given: October 1 2019 - October 1 2020</p> <p>Solution:</p>

	<p>1 year = 366 because feb 2020 is included $366/7 = 52$ remainder 2 2 days after tuesday = thursday</p>
32	<p>C Given: School - Library = 40 kmph Library - Museum = 30 kmph</p> <p>School - Library = 2 (Library -Museum)</p> <p>Solution: Assume distance from Library - Museum = 10 km</p> <p>$(10 \times 2)/40 = 0.5$ hours $10/30 = \frac{1}{3}$ hours</p> <p>$\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$ hours ← 30 km 30 km / $\frac{5}{6}$ hours = 36 kmph</p>
33	<p>C Given: Laptop = \$220 Laptop with tax = \$245.30</p> <p>Solution: Let X = Tax $220 + 220 (X) = 245.3$ $X = 0.115$ or 11.5% Therefore the answer is choice C</p>
34	<p>D Given: 7 test = 75,69,81,90,73 Average = 80</p> <p>Solution: Let X = Sum of the last 2 test $75 + 69 + 81 + 90 + 73 + X / 7 = 80$ $X = 172$ $172/2 = 86$ points</p>
35	<p>A Given: Mark = Ben + 4</p>

	<p>Jake = Colby - 12 Colby = Mark + 4</p> <p>Solution: Ben = Mark - 4 Jake = Mark + 4 - 12 = Mark - 8</p> <p>Assume Mark = 10 Ben = 10 - 4 = 6 years old Jake = 10 - 8 = 2 years old</p> <p>6 - 2 = 4 years older</p>
36	<p>E</p> <p>Given: Vanilla:Flour = 3:4 ← per cake</p> <p>12 tablespoon of vanilla</p> <p>Solution: Let F = cups of flour $\frac{3}{4} = 12/F$ F = 16 cups</p>
37	<p>C</p> <p>Given: \$800 total investments 5% annual 6% annual interest Total = \$843</p> <p>Solution: Let X = amount invested in 5%</p> <p>$[X + X(0.05)] + (800 - X) + (800 - X)(0.06) = 843$ X = \$500</p>
38	<p>E</p> <p>Given: 28/200 = Red</p> <p>Solution: 200 - 28 = 172 pcs are not red $172 / 200 = 0.86$ or 86%</p>

39	<p>C</p> <p>Given: 20 machine = 100 000 widgets in 3 hours 12 machine = ?</p> <p>Solution: $100\ 000 / 20 = 5000$ widget each in 3 hours $5000/3 = 1666.6667$ widgets per hour ecg machine Let T = time $12(1666.66667) (T) = 100\ 000$ T = 5 hours</p>
40	<p>C</p> <p>Given: 7 ropes average = 85 m 2 new ropes added = 110 m and 60 m</p> <p>Solution: $[85(7) + 110 + 60] / 9 = 85$ m</p>