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| **THINK ABOUT IT:** Determine the value of x if the area of the triangle below is 48 m2. $$AREA=\frac{base ×height}{2} $$ |

**REARRANGING FORMULAS –** *Teacher directed*

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| A formula is a mathematical relationship between different quantities that is expressed with algebra. For example, one formula for **s**peed is **d**istance divided by **t**ime, which we express like:$$s=\frac{d}{t}$$In this case, we say *s* (speed) is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the formula because *s* is isolated on one side of the \_\_\_\_\_\_\_\_\_\_ and does not appear at all on the other. We can **change** the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the formula, for example by multiplying both sides by *t*. The equation becomes:$$s×t=d$$Now, d is isolated and becomes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ formulas. |

1) Rearrange the following formulas to make b the subject:

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| **Teacher** | **Your Turn** |
| $$ a=2b$$ | $$a=2b+2$$ | $$a=2b-2c$$ |

2) Rearrange the following formulas for the indicated variable:

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| **Teacher** | **Your Turn** |
| $$ F=\frac{mv}{t} isolate m$$ | $$ I=\frac{E}{R} isolate E$$ | $$ r=\frac{C}{2π} isolate C$$ |

3) Isolate for the indicated variable:

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| **Teacher** | **Your Turn** |
| $$P=2(l+w) isolate l$$ | $$A=P(1+rt) isolate t$$ | $$A=\frac{\left(a+b\right)h}{2} isolate a$$ |

4) Rearrange the following formulas for the indicated variable:

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| **Teacher** | **Your Turn** |
| $a=2b^{2}-4$ solve for *b* | $A=πr^{2}$ solve for *r* | $V=πr^{2}h$ solve for *r* |

5) Rearrange the following formulas for the indicated variable:

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| **Teacher** | **Your Turn** |
| $s=\frac{d}{t}$ solve for *t* | $I=\frac{E}{Z}$ solve for *Z* | $F=\frac{kq}{r^{2}}$ solve for *r* |

6) $V=πr^{2}h$ is the formula used to calculate the volume of a cylinder.

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| Solve for *r* | Determine the radius when *V = 1000 cm3 and height is 5 cm.* |

**PRACTICE**

1. Rearrange the following formulas for the indicated variable

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| $ C=2πr$ solve for *r* | $ y=mx+b$ solve for *m* | $ A=s^{2} $ solve for *s* |
| $ I=Prt$ solve for *t* | $ x^{2}+y^{2}=r^{2}$ solve for *x* | $$ R=\frac{P}{I^{2}} solve for I$$ |

2. **Rearrange** the following formulas for the indicated variables, then **evaluate** for the given values for each variable.

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| $ I=Prt$ solve for *r* *Evaluate when I = $30, P=$1000, t=3 years* | $ P=2(l+w)$ solve for w*Evaluate when P=100m, l=30m* |

**3. Rearrange then evaluate.**

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| a) It is not safe for an adult to surpass her or his maximum heart rate. This maximum heart rate, M, in beats per minute (bpm), is modeled by the equation M=230 – 1.2A, where A is the age of the adult in years.  |
| Rearrange to solve for A. | At what age should a person’s maximum exercising heart rate be 194 bpm?  |
| b) The cost, C, in dollars, of producing a school yearbook is given by the formula C=S+4n, where S is the setup cost, and n is the number of yearbooks printed. |
| Solve the formula for n. | If the set-up cost is $925, how many yearbooks can be printed? If S=$1500? |
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| c) The area, A, of a circle with radius r is given by A = πr2.  |
| Solve the formula for r. | Determine the radius of a circular oil spill that covers an area of 5.0 km2 |

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| d) You can convert Fahrenheit to Celsius using the following formula  |
| Solve the formula for F. | What is 35°*C* converted to °*F* ?  |